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TRANSACTIONS

OF THE

WORCESTER COUNTY

HORTICULTURAL SOCIETY,

FOR THE YEAR 1878;

COMPRISING

ESSAYS:—UPON THE APPLE, BY O. B. HADWEN; THE PEAR, BY JAMES DRAPER; THE STRAWBERRY, BY WM. H. EARLE; VEGETABLES, BY SYLVANUS SEARS.

ALSO,

THE ANNUAL REPORTS OF THE LIBRARIAN AND OF THE SECRETARY.

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MASSACHUSETTS AGRICULTURAL COLLEGE.

WORCESTER COUNTY HORTICULTURAL SOCIETY.

The Committee on Publication have deemed it unnecessary to burden this volume of Transactions with the Schedule of Premiums for 1878.

They also wish it to be distinctly understood that the Society must not be held responsible for opinions or statements, in the Essays now printed, which must depend, for verification, upon the good faith and reputation of their respective authors.

EDWARD W. LINCOLN,
Chairman.

HORTICULTURAL HALL,
January 12, A. D., 1878.

INDEX.

Essay on the Apple..... 5–10
Essay on the Pear..... 11–17
Essay on the Strawberry..... 18–22
Essay on Garden Vegetables 23–26
Annual Report of the Librarian.....27–28
Annual Report of the Secretary.....29–52

THE APPLE.

Read before the Society, February 8th, A. D. 1877.

BY O. B. HADWEN.

If briefly considering the Apple in a few of its phases, will thereby afford material for discussion, tending to create an interest and forward the purposes for which these meetings are called, we most cheerfully comply with the wishes of the Society.

Considering the subject by aggregates we are assured by the last census of Massachusetts' agricultural products that the apple takes the lead of the fruit-growing interests of the State. The soil and climate are found congenial to the growth of the apple; the product of the State in the year 1874 amounts to the very respectable number of 3,252,957 bushels, valued at the sum of $1,450,252. We are also safe in assuming that the people of Massachusetts consume as much, if not more, fruit than the people of any other State in proportion to their number: in fact the home supply does not often equal the demand. Worcester County takes the front rank among the counties of the State in the apple product. In the year 1874 the product of the county was 933,013 bushels, valued at $380,594. The importance of the apple crop both in bushels and dollars is very apparent, but there are other phases of the subject, which are especially important to those who grow fruit as incidental or special products.

Worcester County occupying a central portion of the State, and lying within the great fruit-growing belt, is, both in soil and climate, especially adapted to the growth of the apple, which has received care and cultivation from the earliest settlement of the county. Here many varieties of apples have had their origin that are proving highly satisfactory, not only here, but wherever they have been disseminated. Among these are the Hubbardston Nonesuch, first found growing in the town of Hubbardston, and the original tree is still in existence; few apples rank higher in its season, or are more universally esteemed wherever cultivated. The Holden Pippin originated on the farm of Captain Samuel Hubbard, of Holden.

The tree is at the present time about one hundred and twenty years old, and is still in bearing. The tree is a strong and vigorous grower and bears abundant crops in alternate years. The fruit is highly prized for culinary purposes, and in condition when other apples are not abundant.

The Mother apple, originating in the Town of Bolton, is one of the high aromatic flavored apples, and much sought as a dessert fruit; the tree is but moderately vigorous, but bears abundant crops in alternate years. But few apples have a deeper color or more flavor than the Mother.

The Palmer Greening, or Washington Royal, has as many desirable qualities as any, not excepting the once famous Newtown Pippin. It had its origin on the farm of Joseph P. Hayward, of Sterling. This apple is regarded in the neighborhood where it originated, and is considered where it has been introduced, as one of the highest excellence, both for the table and for cooking, and commands a higher price in market than other sorts; it has not yet been widely disseminated, although in our judgment it ought to be.

The Sutton Beauty also originated in this county, on the farm of John Waters, in the town of Sutton. This is also proving the peer of the Hubbardston Nonesuch, in some respects even better, has more character, flesh more tender and juicy, better color, and keeps later; a very abundant bearer, and the tree having an upright growth supports its heavy crops with less injury by breaking than trees of a spreading habit. We have no doubt that this sort will grow into favor as it becomes better known and more extensively grown.

The Foundling, having its orign in Groton, is also proving a desirable sort, as well as an annual bearer of large crops. Some years we have found this our most profitable apple, having the characteristic of commencing to ripen in August, and coutinuing on the trees even till November. Thus we have an early apple for three months, equally good for the dessert or culinary uses. The tree has a low spreading habit; it is more desirable to engraft it into upright growing trees.

The Twenty Ounce, is supposed to have originated in this county, north of Worcester, and used to be sold in our market for the Lyscom, which it sometimes resembles. When shown at the early Exhibitions of the Society it was soon discovered that it differed from the Lyscom, and being exhibited from the town of Sterling it was named and shown as the Sterling for many years. In the meantime it was described by Downing under the name of Twenty Ounce, and a half-dozen other synonyms; but let us call it the Twenty Ounce henceforth. This apple, whether to the manor born or not, proves itself a very desirable variety, large, showy, juicy, and sprightly, an annual bearer of large crops, and

the tree of excellent habit; in fact no apple seems to thrive better with reasonable cultivation; and its season is from September to January.

The Worcester Spy, also originating here, has some desirable qualities, but after ten years trial we cannot recommend it for general cultivation.

The Leicester Winter Sweet, had its origin in Leicester, and was brought into notice by the late J. Milton Earle. It is proving after fair trial, to have many desirable qualities and worthy of cultivation. It is the most showy of the Winter Sweet apples, and especially good for baking.

There are of course many other varieties of apples of both foreign and native origin, that will repay well for good cultivation; among these are the Red Astrachan, Williams' Early Red, Duchess of Oldenburg, Sweet Bough, Gravenstein, Maiden's Blush, Pumpkin Sweet, Fameuse, Baldwin, R. I. Greening, Yellow Bellefleur, Roxbury Russett, which are very generally cultivated. In almost every town in the county there exist some apples of decided merit, which have not been brought into general notice, that seem to thrive well and bear abundant crops, and if more generally disseminated would prove valuable acquisitions. But we have already varieties enough, unless the new ones prove better than the old, and but few apples probably will ever be introduced superior to the Duchess of Oldenburg, Williams' Early Red, Gravenstein, and other popular varieties in their respective seasons.

Good care should ever be adopted in the cultivation of fruit, but the treatment should vary with the condition of the soil and other surrounding circumstances. The orchardist who succeeds well with his trees in grass, in land of great depth and fertility, should not recommend or prescribe grass for orchards in thin and impoverished soil. The man who has a shallow soil and has injured the roots of his trees with the plough because they are near the surface of the earth, should not object to the thorough manipulation of deep soils. Therefore it is absolutely necessary for each and every grower of fruit to diligently and patiently study his situation and surroundings, if he desires the best results to reward his labor. Fruit trees exposed to bleak, and especially to drying winds at the time they are in blossom, are likely to be damaged by drying and destroying the adhesive qualities of the pollen of the flower, and wafting it from, and beyond the uses which Nature intended it to serve. Thus shelter is as important to the orchard as is good cultivation; and without shelter, crops are more uncertain, and many orchards failures. Shelter from winds is very easily obtained by belts of trees surrounding the orchard, and no better tree can be found than the European Larch for that purpose, at least for this county. If set at the same time of the orchard, its rapidity of growth gives the orchard complete shelter before the trees

come in bearing; and even if neglected at that time, they can be planted out afterward and in six or eight years will be sufficiently grown to afford protection. There are other trees which also are desirable for protecting the orchard; the White Pine, the Norway Spruce and the Hemlock. These trees are of spreading habit, requiring more room, but as it is always desirable to add to the beauty of the landscape, a variety of trees if judiciously planted, having a regard for appearances, will be both ornamental and useful; but old-fashioned farmers have strong objections to trees, and cherish the dogma that they injure grass more than do the winds; at the same time forgetting all about the advantage and shelter they afford the fruit, as well as other crops. But there are those who love to believe that true economy and true taste are accordant; and that the graces, as well as the profits of life, may be kept alive and in view, by the practical aims of all farmers worthy of the name.

In considering the cultivation of the apple we have therefore concluded that due economy requires that the orchard, and trees growing out of the orchard, should be well sheltered from fierce winds from any quarter, and especially from the drying winds blowing from southwest or northwest to insure good crops; and if large annual crops of fair fruit are expected no other crop should be taken from the ground, unless annually enriched. But if the soil is deep and retentive of manures and moisture, and the trees are planted at least forty feet apart, other crops may be taken from the orchard without apparent injury to the apples. The soil must by no means be allowed to become impoverished, but should receive an annual dressing of suitable manures. Experience teaches that for extensive orchards, trees planted forty feet apart is a desirable distance; the trees growing shapely, and giving ample space for cultivation of other crops if desired; and it must be remembered the roots of trees occupy and are nourished by the lower strata of the soil to a considerable extent, and the tops unquestionably derive sustenance from the ocean of atmosphere that surrounds them.

In the earlier history of Pomology in this county, the fruit-grower had but few insects to contend with; but it is found that just in proportion as you increase, improve and cultivate your fruits, insect enemies increase in like proportion, confronting the fruit-grower on every hand, and thereby his best efforts are often thwarted. We can only master these enemies by studying their habits, and we may thank the entomologists that have pointed out their habits, and the life history of every insect that make depredations in the orchard and garden. Among the insects that commence at the root or base of the tree is the too well known apple tree borer. They do vast injury to the apple tree, but they are easily checked if taken in their early stages of insect life. The egg is deposited near the base of

the tree in the month of June. Instinct seems to direct the deposit of the eggs where the bark is moist and soft, the worm soon comes from the egg and perforates the bark; making a small hole it finds its sustenance beneath the bark, at the same time making a circuitous apperture. If trees are examined early in the months of August or September, their hiding place may at once be detected by a slight discoloration of the bark, an increase of moisture, and by their castings being thrust outside, which appear like fine sawdust; and it is by this that their presence in the tree is most readily recognized. At this stage of their growth they are easily cut out with the point of a knife; but if neglected they work their way into the sap wood and can only be removed by a flexible copper or iron wire, and they are with considerable difficulty reached even with a wire, if too long neglected.

There are also insects which feed upon the leaf of the apple tree; hereabout the tent caterpillars are most numerous and destructive. Fortunately the habit of these insects render them so conspicuous that their destruction in the early stages of their existence is easily accomplished The female lays her eggs in June or July, arranging them in the form of a broad ring, on the twigs near the extremity of the branches; they are protected by a coating substance apparently water and weather proof, and which is eaten by the young worms when first hatched. The eggs thus deposited remain until the next spring when they commence hatching, about the same time that the buds begin to expand, but seldom all the eggs are hatched at once; if cold days intervene they do not hatch until warm days return. By the cold storm which occurred in 1876 nearly all the tent caterpillars were destroyed soon after being hatched, but when a season favors them, which is usually the case, they come forth in vast numbers, and their great voracity strips the trees of their foliage and is of serious consequence to the orchard. Soon after the worms are hatched they commence feeding upon the young and succulent leaf, and unite in their efforts to form a web to protect them from the weather; at this stage they are conspicuous enough to be easily seen, and when in their tent are readily destroyed en masse; and no orchardist can afford to neglect to destroy a worm, at once so destructive and unsightly.

The canker worm has sometimes overrun some of the orchards in the county, and they have often counteracted the injurious depredations of the codling moth, by cutting off the supply of fruit, thereby starving them out; therefore it would sometimes seem that insect can more effectually contend with insect than the fruit-grower does.

The Codling Moth and the Curculio, are most destructive to the apple; often rendering the bulk of the crop unmerchantable by their depredations; and thus far they have had almost undisputed sway. But few

cultivators successfully prevent or contend with these insects, and they are rapidly increasing. We think that the fruit-grower in the future will have to devise means and give time and labor to destroy these insects if good fruit is to be grown, and the sooner we learn the most effectual means for their destruction the better.

The cultivation of the apple has long been an important interest in our county, and holds a respectable rank among our agricultural industries. The money value received for the last crop of 1876, apples exported from the county, will probably exceed by far the value of any other product; thousands of barrels having been, and are still being sent to other cities and foreign ports; and although the price has been comparatively low, still the sum total must amount to several hundred thousand dollars. This has been accomplished by very ordinary, I might almost say by haphazard cultivation; good cultivation, or the care that other crops have to receive, would have undoubtedly doubled the money value of the apple crop by largely reducing the per cent. of fruit that is unmerchantable, and unfit for use. All questions regarding the culture of crops of all kinds, sooner or later resolve themselves into the one great problem, *Profit*, which is the bottom round of the ladder of success.

THE PEAR:

ITS CULTIVATION AND VARIETIES.

Read before the Society, February 15th, A. D. 1877.

BY JAMES DRAPER.

While the question of the over production of fruit, and the over stocking of the market is being agitated, some may doubt the expediency of increasing the cultivation of fruit in this section as a matter of profit. Consequently it may not be time wholly misspent to discuss some of the features of fruit growing that will be of practical value to every tiller of the soil. Whether the growing of fruit for the market is as profitable, taking all things into account, as the culture of vegetables, or the production of milk, I shall not attempt to decide. But on one point I am certain, that no farmer or owner of a garden plot can afford to do less than to provide a liberal supply of fruit for his own family of the choicest varieties, so arranged as to cover the entire season of the year. It would certainly seem presumptuous for me to think I could give much new information to a body of old and well tried fruit growers like many we find present to-day, but as you have requested me to open the discussion to-day, by a paper on Pears, I have briefly noted down a few things that come to mind from my observation and experience during the last fifteen years. The matter of the origin of the many varieties may not be of any special interest, but while we are indebted to the pomologists of other countries for the production of some of our best and highest flavored varieties, we are glad to note that our own American cultivators have given as the reward of their labors, some of the hardiest, most productive, and most valuable varieties, the Clapp's Favorite, Seckel, Sheldon, Howell, Onondaga, and Lawrence, proving to be in many respects equal to any given us from foreign sources.

Shall we plant standard or dwarf trees? Many will answer emphatically, standards. I would not give much for dwarfs, they do not amount to anything. My experience with the pear on a quince stock on my heavy, clayey soil, has been very favorable, and I have now in bearing

many dwarf trees that have produced heavy crops for over twenty years, and some trees yielding from two to four bushels of fruit annually. If one has a light or sandy soil I would not recommend dwarfs, except perhaps I should want the Duchesse, Louise Bonne and Vicar, on the quince roots. On our rich, loamy and heavy clayey soils, where the pear seems to thrive best, I should set one-third to one-half of the dwarfs, taking of the varieties that seem to be particularly adapted to the quince stock; of these the Duchess, Louise Bonne de Jersey, Belle Lucrative, Vicar, Doyenné du Comice, Beurre Superfin, and perhaps the Clapp's Favorite. I should plant these trees between the standards, and by so doing we can plant nearly double the number of trees on an acre. Pear trees may be set in rows twenty feet apart, and twenty feet apart in the row. By planting dwarfs between we get the trees ten feet apart in each row, which is a good distance for an orchard.

How shall a tree be planted? I am aware how hundreds of trees are planted, by digging a small hole, filling it half full of strong manure, stick in the tree, jam the roots down with the boot heel, fill up the hole with sods, stone and dirt, and then vent your wrath upon the nurseryman for selling you poor trees, calling him a cheat, a swindler, a scoundrel, and other pet names, because your trees happen to die. In the first place the roots of a tree must have room; so let the hole be dug large enough to admit all the roots without cramping them, and then set the tree into the ground so that the small surface roots will be about two inches lower than where they stood in the nursery rows. Dwarf trees should be set so that the quince stock will be buried three to four inches below the level of the ground; in this way many dwarf trees will strike a pear root above the bud, and so the tree eventually becomes a standard; we then have the advantage of early fruitfulness and long life to the tree. Having placed the tree in the hole in proper position, fill in the hole with fine dirt, working it in around the roots with the fingers or a small tamping stick; when the roots are well covered a few shovelsful of compost may be used to advantage, but the use of green, unfermented manures should always be avoided in the transplanting of trees.

In regard to the after culture of the pear, if the soil is already rich the tree will not require much extra feeding, but on the average of our New England soils, trees need liberal manuring to grow and produce well. The manure should be applied in the fall of the year; three or four good shovelsful of well decomposed manure piled around the trunk of the tree will answer a double purpose of preventing the ravages of mice, and of furnishing nutriment to the tree, at the right time. The spring rains cause the leaching of the manure about the roots, which by being enriched early in the season will make a good growth of wood that becomes well ripened before the autumn frosts.

The time for transplanting trees, spring or fall, should also be considered. If the soil is dry and well drained of surface water, trees may be transplanted in the fall of the year with as equally good results as in the spring. The soil is in better condition, being dry and mellow, and will pack better around the roots; the tree will get firmly established ready for an early growth the next year; and, again, a farmer usually has more leisure in the fall, and can give more time to the work, which will be done better than in the hurry of the spring work. If the land is in any way wet or exposed to the bleak northerly winds, I should invariably take the spring months for transplanting. The proportion of spring to fall planting, as practiced by my customers, has been as two to one, two-thirds of our trade being in the spring, the other third in the fall of the year.

When and how shall we prune? The nurserymen have hit upon one general rule: "to prune when your knife is sharp," which establishes one fact,—that light knife pruning may be performed at any season of the year. On the other hand, if large limbs are to be taken off, or a heavy pruning on large trees, we should take the months of March and April for the purpose. Trees, when first transplanted, should be cut back heavy, at least two-thirds of the previous year's growth should be taken off. This will help counterbalance the loss of root, and also give the root a chance to get established first, without being compelled to furnish sustenance for bud and leaf on superfluous wood. I believe that more trees from the nursery die every year for lack of this cutting back process than from any other cause. After the first year's heavy pruning, a young tree will not require much pruning for several years; simply keep them clear of sprouts and cross limbs. When we find the trees making a heavy growth, say of two to three feet in a single year, it is best to cut them back again, which will make them more stocky, and it also tends to bring them earlier into bearing, which is desirable when a tree has attained a bearing size.

If one's orchard is in an exposed place where strong winds prevail, a shorter, more stocky tree is most desirable.

As nearly every variety of pear is better to be taken from the tree and ripened in the house, a general rule that will apply to every variety is most desirable; in this I have special reference to the summer and early autumn pears. The later autumn and winter pears should all be gathered about the first week in October. The earlier fruit should always be gathered a week or ten days before it is ripe, and the time to pick them can generally be decided in a very simple manner. When the windfalls and worm-eaten specimens that drop from the tree, have the appearance of ripe fruit by their color, mellowness and natural flavor, it is safe to say

that it is about the right time to gather the crop. Pick them carefully by hand, and store in a dark, dry, cold place, and they will soon be ready for use or the market. Pears intended for the market should be sent away before they become mellow, as it does not much improve the looks of fruit to carry it over rough roads and pavements when in a ripe or mellow condition. The later varieties should be gathered with great care, not allowing them to get bruised in handling, and stored in a dark, dry cellar, as cold as may be without freezing. If it is desirable at any time to hasten the season of ripening, carry them into a warmer room and they will usually ripen in a short time.

With a list of over a thousand named varieties, and some over a hundred in general cultivation in this country, there may arise some differences of opinion from what I consider the most valuable sorts for general cultivation. I have aimed to name the varieties that contain the greatest number of valuable qualities, such as productiveness, healthy, vigorous growth of tree, excellence of flavor of fruit, and good keeping sorts that will not decay too rapidly.

To report the conversation with a customer last spring will give some idea of what is generally conceded to be the most popular variety. After the usual salutation, I put the question: "Something I can show you today, sir?" "Yes, sir; I want to buy some pear trees." "Do you wish for standard or dwarf trees?" "No, sir; them are not what I want at all. I want them kind what you call Bartletts." "Very well; we have that variety, both as standards and dwarfs, but they do best as standards; I will show you what we have." Showing my stock of trees, size and price being satisfactory, I learn that he wants a dozen trees, and suggest that as he is just starting his fruit garden, and as he has room for only a dozen trees, that it would be desirable to have several varieties so as to give him a succession of fruit through the season. I mention that we have some varieties of summer pears, some ripening during the fall, and some winter varieties. "All right, sir; them's just the kind I want. Put me down two early Bartletts, two fall Bartletts, two winter Bartletts, and I'll have all the rest the regular Bartletts." The sum and substance of this matter is that the Bartlett pear is the one above all others that everybody knows. I think I am safe in saying that fully one-half of my yearly sales of pear trees are of that one variety, and although I would not recommend planting as many varieties of the Bartlett as did my Irish customer, I should make it the leading variety for market culture on account of its unrivaled popularity.

Next to the Bartlett in value, as a market sort, I should name the Clapp's Favorite, which I consider one of the greatest rivals of the Bartlett we now have, ripening a week or ten days earlier, being larger in

size on the average, of a rich crimson and yellow color, which makes it very attractive on the fruit stands, and also having a more sprightly, vinous flavor, which I consider far superior to the Bartlett. The tree makes a very healthy, vigorous growth, is perfectly hardy, and comes into bearing young, another desirable feature.

Ripening after the Bartlett, next in value I should place the Sheldon, one of our most valuable American pears. It is not as productive a sort as the two first named, but a fruit of good size and most excellent quality, and becoming more and more popular every year on our fruit stands; we find it also an excellent keeper, a very desirable quality in our fall pears. Following the Sheldon in order of ripening comes the Louise Bonne de Jersey, one of the heaviest and most regular bearing varieties now in cultivation. In size it is rather below the average, but it is generally a very highly colored fruit that gives it an attractive appearance on the stand, and makes for it a ready sale. The Duchesse you are already aware is the largest size fruit grown. It is very juicy, but a coarse grained fruit, and not of the highest quality, but its extra large size commands for it a ready sale at high prices. This is one variety that seems to thrive best on the quince root, many having found it to be a failure on the pear root.

The Beurre Bosc is perhaps the most popular variety of October pears now in the Worcester market, and the large, rich, golden russet colored specimens are much sought after by the lovers of a delicious fruit. To get this variety it is best to graft it upon some old trees, as it is a very poor grower in the nursery row, and but few nurserymen attempt to grow the tree for sale, on account of its slow crooked habit of growth. Next to the Beurre Bosc, we shall place the Beurre d' Anjou, now generally admitted by fruit growers and horticulturists in this section to be the best in every particular of the late fall pears. It commences ripening in October, and many years will keep till Thanksgiving. The President of the American Pomological Society, the Hon. Marshall P. Wilder, claims for this sort that it is the best pear of its season grown in this country, covering more points of value than any other, and all lovers of a fine grained, rich, melting, high flavored fruit, will coincide in his opinion.

For a later fall or early winter pear we have the Lawrence, a fruit of medium size only, but ranking among the best in quality, being of fine texture and most excellent flavor. It is also a good keeper, and ripens and colors up well. I have named a list of eight varieties of pears, covering almost the entire season, that, in my judgment, are the most valuable sorts for general cultivation for the market, to be found in the list of pears.

The tendency to cultivate a great number of varieties is, I think, a

mistake; the fewer sorts the better. If I were growing fruit for the market, and was to plant a dozen trees, I should not care for more than two sorts; out of twenty-five trees I would not have but four, and out of a hundred not over eight, and those eight would be the ones before named.

To go on a little farther, we will consider a few varieties for amateur culture, or for one's own family use, covering a longer season, following in closer succession, and embracing some of the finest flavored sorts of the highest character. Ripening a few weeks before the Bartlett, we have the Rostiezer, a juicy, sugary pear, of small size, and the Beurre Giffard, a fruit of medium size, a good bearer and of fine flavor. Ripening after the Bartlett, we have the Seckel, known to you all as one of the richest, finest flavored pears in cultivation. Although I would advise every one to have a Seckel pear tree for their own use, I hardly think it a profitable variety to grow for the market.

The Doyenné Boussoc is a fruit of large size and quite showy, and some cultivators have found it profitable as a market sort. Like the Bartlett, it decays rapidly, and is not as reliable as some other varieties ripening at the same time. The lovers of fruit of a sprightly, vinous flavor will find the Beurre Superfin and Paradis d' Automne to be most excellent varieties. If a sweet, melting, sugary pear is wanted, the Beurre Hardy will supply the want, and ripening about the first of October

If any one wishes for a fine growing tree of a shapely, upright habit of growth, as an ornament to an estate, take the Buffum and you will be well suited, but you will find the fruit small, and number two or three in quality. If you like a mealy pear you will have it in the Buffum, and get a crop of them every year. The Belle Lucrative is another regular and heavy bearing variety of good size, and very juicy and sweet, in fact it is rather too sweet to suit some tastes, but our sweet toothed pear eaters all claim that it is just splendid. I have found this to be a profitable market sort, being of good size, and a heavy bearer every year.

Another variety of the highest character, and ripening in November, is the Doyenné du Comice, a fruit of a large size, and a fair cropper. This variety seems to thrive best on the quince stock. The Winter Nelis is a small sized November pear, but a very rich, melting, juicy fruit, of the highest flavor. This is one of those rambling growing trees that discourage nurserymen, and it is best obtained by grafting it upon some older trees.

A variety that many have condemned on account of its ripening so poorly, is the Vicar, one of our latest keeping varieties. Now the fault does not rest so much with the pear as with the management it receives. It is an enormous bearer, and bears regularly every year. By thinning

the fruit, and not leaving more than one-third upon the tree, we shall get fine large specimens that will ripen well, and prove to be of very good quality. Like all winter pears it wants to be stored in a dark, cold, dry place, till ready for use; with this management the Vicar is a very valuable variety; with neglect it will be worthless every year. The Beurre Clairgeau is a very profitable market sort, being a good bearer, and a large sized, red cheeked, handsome fruit. Its attractive appearance will sell the fruit, but its quality would never commend it. I did not put this on my list of eight best market sorts, as I consider it an imposition upon the public taste, to palm off upon them such a poor fruit as this, even if it is handsome, and there is money in it.

The Flemish Beauty was quite popular a few years ago, but of late years the fruit has cracked badly, which makes it unreliable. In point of flavor it is superior, and on this account I would venture a single tree in a collection for one's own use. Beurre Diel, or November pear, once very popular, has the same habit as the above, but I think not quite as bad. It is a great bearer, good size, keeps, and ripens well, and with a bright golden color. On account of this habit of cracking, I should place the Onondaga in place of the Beurre Diel, as it is very much like it in appearance and ripens nearly at the same time, perhaps a little earlier of the two.

This list might be extended by adding the St. Ghislain and Washington, fine September pears, and the Josephine de Malines and Mt. Vernon for winter, and so on to the end of the chapter. I will allude to one more and then I am done. The Earle's Bergamot, a seedling originated by the late Hon. John Milton Earle, of this city, is a variety that has impressed itself very favorably upon my taste. It has a peculiar flavor of its own that lovers of choice fruit will enjoy. Our friend Mr. V. P. Townsend, of Quinsigamond, is the only exhibitor of this fruit at our Horticultural Exhibition, to my knowledge, but I hope that in some way it may become more generally disseminated through this section, for in point of quality there are few pears that will equal it.

In this rambling sort of a manner I have given you my views and experience. The subject is open for your discussion. If, as the result of it, some are induced to thus improve their homes by planting a few trees, let me add get good trees, of good varieties, from some reliable nurseryman; give them good care, and your labors will be crowned with a liberal harvest, and your children and your children's children will rise up and call you blessed.

THE STRAWBERRY.

Read before the Society, February 22, *A. D.* 1877.

BY WILLIAM H. EARLE.

The cultivation of the Strawberry is a subject of increasing importance to all persons interested in the growing of small fruits, especially in the vicinity of large cities and manufacturing villages.

In my boyhood days in the quiet country town of Hubbardston, on my father's farm, which by the way was adjoining the farm where still stands the original apple tree, nearly a half mile from any human habitation, from which sprang the delicious fruit now known all over the continent as the "Hubbardston Nonesuch,"—on this same farm I have often gathered a pailful of native strawberries in an afternoon; but cannot remember ever having seen, in that town, a single dish of *cultivated* strawberries before I was fifteen years of age; in fact, for some years after, the growing of a family supply even was considered doubtful, and the idea of selling cultivated fruit for profit was seldom entertained. Now, perhaps, there is no fruit grown that finds a readier market or affords the grower a better profit.

The interest manifested within the past few years in growing strawberries is most encouraging, and shows how earnestly the people desire to raise their own fruit. And this is right, for fruit long since ceased to be looked upon as a mere luxury for the few and fortunate, and has come to be regarded as an essential article of healthful food. I know of no other fruit that thrives and flourishes over so large a portion of the earth's surface as the strawberry. It is adapted to almost all kinds of soil, and with intelligent treatment will bring the grower ample remuneration for his labor and outlay.

More than 400 varieties have been under cultivation in this country within the last twenty years. To produce these 400 varieties many hundred thousand seedlings have been raised. I was told last summer by Mr. Durand, the originator of the "Great American" Strawberry, that

MASSACHUSETTS AGRICULTURAL COLLEGE

he seldom obtained more than two or three varieties, out of several thousand seedlings, that were worthy of being propagated. It is said the late Seth Boyden raised some twelve or fifteen thousand seedlings, conducting many of his experiments on strictly scientific principles, crossing varieties, guarding against accidents from the elements and insects by protecting his propagating plants during the blossoming season, but from this large number we seldom hear of any except the "Agriculturist," "Green Prolific," and "Boyden's No. 30"; and even this last has recently been greatly improved and is now known as "Boyden's No. 30 *Improved.*"

Although I have grown strawberries in Minnesota, New Jersey and Massachusetts, yet my experience is comparatively limited; and in this paper I can only attempt to touch upon a few of the more important requisites for the successful cultivation of the strawberry.

The best soil is a deep light loam, not too dry, which should be prepared in the fall by deep ploughing (and if not too stony the sub-soil plough should be used), putting on all the well rotted manure you can make or buy—being careful to first see that it is *thoroughly pulverized* by being worked over at least two or three times—and then applied so as to leave it as near the surface as possible, but well mixed with the soil. Leave the ground in the fall in rough furrows, and at the earliest practical moment in the spring cross plough with a light one-horse plough. In this condition leave it until the day you are ready to set your plants.

And now comes the question, "*What kinds* shall I plant," and "*where* shall I procure genuine plants strictly true to name?"

In answering this question I shall name only a few kinds and such as I have quite thoroughly tested and consider best adapted to the soil and climate of this neighborhood. I shall also name them in the order in which my own experience, as a grower, has proved them to be valuable, both for family use and the market,—Charles Downing, Jucunda and Wilson's Albany.

These are all hermaphrodite, having perfect blossoms.

The "Charles Downing" is a seedling from the Downer's Prolific, which originated with Mr. Downer in Southern Kentucky. It is extremely hardy, ripens early, is of excellent flavor, and a great bearer.

The "Jucunda" I believe to be the handsomest and most attractive strawberry yet produced. It is uniformly large, of beautiful scarlet waxen color, and nearly every blossom forms fruit. It has a very long season. One year I gathered fruit from the same vines for six weeks in succession. The plants of this variety, however, make a very slow growth the first season after planting.

The "Wilson's Albany" needs no description. To those who have

not the taste, time or patience to cultivate the far more preferable varieties, and who expect a fair crop of fruit, with little or no care; or with those who live a long distance from their market and must therefore grow a kind that is firm in texture, and that will color up well, even when picked quite green, the Wilson's Albany will probably fill these unprofitable and unpardonable conditions better than any other variety I know. It originated twenty years ago, and by its great hardiness and productiveness has won its way in estimation among growers as a profitable market berry, until it is probably safe to say that nine-tenths of all the strawberries now raised for market in this country are of this variety,

To the question *where* shall we buy plants? I answer, only of persons who are known to be perfectly *reliable*, and who will therefore sell plants *true to name.* "By their *fruits* ye shall know them," applies in this case not only to the *plants* but also to the *seller.*

If possible select your plants from beds in your own neighborhood, where you have seen the perfect fruit growing. If possible set them out the *same day* they are taken up. Plants shipped by mail or express, from one State to another, are not worth on the average one-fourth as much as the same varieties procured near your home.

Your ground having been smoothed off and prepared as previously directed, you are now ready to mark off your rows with a garden line. The plan I have followed for the past few years has been to *plant in beds* of three rows each, the middle row being eighteen inches from each of the others, and the plants set twelve inches apart in the row. Fruit can thus be the more easily gathered. These beds should be three feet apart. The beds should be prepared only a little in advance of the planting, in order that the earth shall be *fresh* and moist in which the new plant is to be set. If the soil is in the condition it should be you will need no trowel, but should set your plants with your hands. If this is found too severe for the fingers, holes may be made with a dibble made from the handle of an old shovel. Suppose for instance you wish to plant out one acre in strawberries. If set as before indicated it will require about 21,000 plants to set an acre. To set these plants properly and economically will require two men and two boys, and if a dibble is used, a fifth man. The first one will prepare the ground and place the lines; the second will prepare the plants by cutting off with sharp shears the ends of the roots, and if the tops are much grown, the larger leaves, and then dip the roots in a liquid manure, made by putting a quart or more of well rotted manure into a pail of water. A boy then takes enough plants in a basket, covering the plants with a wet cloth, and drops them only as fast as the fourth man can properly set them out. They should be set well down into the ground and the soil *firmly pressed* about the plant; the surface of

the ground nearest the plant being, by this process, made as it should be, a little lower than the surrounding surface. In this manner I have set out 5,000 plants in a day with my own hands. Vigorous plants set in this way, freshly transplanted, will nearly every one live and succeed. Plants should be set out very early in the spring. I have no faith in fall planting. Properly set out they will very seldom need any watering. If set out late in the season it should be done on a cloudy day or late in the afternoon. After the field is planted the ground should be *kept entirely clear from weeds*, and all blossoms and runners should be pruned off the first season.

Wood ashes will be found one of the most valuable top dressings that can be applied. Late in the fall when the ground has become frozen, a *mulch* of pine leaves, hay or straw, should be applied, covering the whole ground. If the strawberry growers would unite in buying *salt hay*, probably there is no other material that is superior for this purpose. The following spring I should not remove the mulch, but only open a small space for the crown of each plant. This mulch will serve three purposes. It will keep the ground moist, prevent the growth of weeds, and keep the fruit clean as it ripens. But to secure the most bountiful crop perhaps the most important hint has not yet been suggested.

When President Wilder, our eminent horticulturist, was asked how he succeeded in growing such beautiful strawberries, he replied, "three "things are necessary. First, you should give them *plenty of water*. But "this will not answer unless you observe the second requisite; viz: Give "the plants a *little more water*. But with all this labor and care you will "fail in obtaining the best results if you fail in the third condition, viz: "*Give the plants a little more water.*" This I believe to be the grand secret of success. How it can be accomplished is an important question for us to discuss.

After the fruit has been carefully gathered the tops of the plants may be cut off with a scythe and allowed to remain on the ground a few days, until the new shoots start up from the stools, (otherwise the hot July sun may kill the plants) then the whole ground should be raked over, and all mulch and rubbish removed and stacked up, ready for another winter's use.

For the remainder of the season the ground should be thoroughly cultivated and manured, and my practice has been to continue to keep off all runners as before; yet many prefer to let the runners take root the second season, and by covering the ground with plants, secure one more very large crop (although of rather smaller berries than when grown in hills), and after that plough them up and reset.

In the cultivation of this fruit, as in all others, remember the *better*

the culture the better the crop. Let no *green thing* be seen in your strawberry field, except the plants and fruit, for if weeds abound the *greenest* thing about the premises will be the *management.* If one "takes interest in the business, hates weeds, is up with the lark and free with elbow grease," he will be surprised at the possible results.

A Mr. Smith, of Wisconsin, says he grew 411 bushels on an acre. Thomas Meehan, editor of "Gardener's Monthly," says he saw at the grounds of J. B. Whitney, near Detroit, Michigan, a large milk pan filled with fruit by the picker, from a space so far as he could reach out around him without moving his feet away.

Year before last at my grounds at Sunnyside, on about three acres of land, I realized a gross income of a little over $2,000; a large proportion of my crop being choice varieties of strawberries.

In preparing strawberries for the market the same care should be used in making a *second quality* of all inferior fruit, as we practice in assorting apples or other fruit.

To those who plant, cultivate and market with intelligence, perseverance and care, the choicest varieties of strawberries, there will always be found a ready market, at good prices; while for *inferior* fruit (and in this list I must include the "Wilson,") a glutted market often affords the grower naught but low prices and disappointment.

If the same force, thought and effort that many of our amateur cultivators show in the pleasure and profit they obtain from their gardens, can be carried to the cultivation of our larger fields and farms, we shall all soon have a better appreciation of the capabilities of the soil, and more correct ideas of the uses and value of Horticulture.

To aid and encourage such progress is a worthy and commendable work.

GARDEN VEGETABLES.

Read before the Society, March 22, *A. D.* 1877.

BY SYLVANUS SEARS, OF WORCESTER.

The first garden we have any account of in Sacred or Profane History, was the Garden of Eden. It was certainly the most *beautiful*, as it contained everything that could delight the eye. It was certainly the most *useful*, as it contained everything that was needed, both for the food of man and beast. It was certainly the most *comprehensive*, as it contained not only all the flowers of fields, and all the vegetables that grew out of the ground, but also all the trees whose fruits were pleasant to the eye or good for food or any other use. That garden has passed away and the place where it was supposed to have been is now a howling wilderness. But man transgressed and was driven out of that garden, and since then he has been obliged to earn his bread by the sweat of his brow. But I am digressing and must come at once to my subject.

The great secret of success in market gardening lies in the succession of crops, heavy manuring, thorough cultivation and a good market; but all of these will not give the best results without the gardener's skill in keeping the ground fully occupied, and in that more than all other things is where not only gardeners but farmers fail; they keep too much unoccupied land, for if it is not occupied with crops it soon will be occupied by weeds.

In selecting a location for raising vegetables many have made great mistakes; first in locating too far from their market. It is done perhaps because the land is much cheaper, but they find their mistake when they come to transport their fertilizers to their land and cart their vegetables to the market. The cost of manure is very much enhanced by carrying it a long distance, and the vegetable gardener must have a good supply, else his crops will be meagre and of small size, and his profits will be proportionately small, and if his vegetables must be carted six or eight

miles over rough roads, and through the hot sun and dust of summer, they become bruised, wilted, and lose much of their fresh and inviting appearance, and as a matter of course cannot command so good a price in market. If he locates within one or two miles of his market, his teams will accomplish three or four times as much in hauling manure and in carrying his produce to market as he would if he was six or eight miles from it. Peter Henderson says in his "Gardening for Profit," "it is better to pay $500 an acre for land lying one or two miles from market than to have it given him at eight or ten miles away."

A gentleman was once asked how he managed to raise such beautiful flowers, replied: "I *manure* them with *brains*." So the market gardener has need of a large quantity of this commodity in order to make the business pay. He may not be able to write a nice *essay*, or speak *eloquently*, as many who have preceded me have done, and although he may not be able to tell how many hundreds of dollars he has made from an eighth of an acre of land, as some who have preceded me have done, yet he *may show* by the superior *quality* and *size* of his *vegetables* that he has not applied his talents in vain.

When to apply the *fertilizers*, *how*, and in what *quantities*, and *what kinds*, requires much discrimination and *study*, for on this *hinges* success or failure many times.

Some vegetables require fertilizers containing *Ammonia* and *Nitrogen*, in order for them to grow successfully; while others require potash, and others require phosphate of lime to develop them to perfection. Thirty years ago we had but little choice in fertilizers; barnyard manure was then the only source of supply and we must use that or none. But now we have fertilizers for almost every crop we grow if we have need to purchase them. I use barnyard manure for my principal supply, either fermented or in its green state, according to the crop I apply it to; and then use home-made superphosphate of lime to stimulate the crops to an earlier development; the same as some of our Congressmen take whisky or brandy to stimulate their brain when they are *writing* or *speaking*. And it *operates* the same in the *vegetable* as with the man when we use too much; it *floors them*, or in other words it kills the germ and the seed does not vegetate; but to obviate this trouble I throw a little soil over the phosphate and plant on top of that when I drop it in the hill.

Prof. Stockbridge, since he has been connected with our Agricultural College, has instituted a series of experiments which, I think, will be of incalculable benefit to the market gardeners of this State. He has demonstrated by his experiments that chemical fertilizers may be prepared which will be of equal benefit to the growing crops as *animal excrements*, and that they are to be procured and applied much cheaper, thus giving

a larger profit to the producer. Dr. Nichols has raised corn on the same piece of land twelve years in succession and applied nothing but chemical fertilizers, and the number of bushels per acre constantly increased until they reached 105 bushels per acre, and it was raised at a cost of less than fifty cents per bushel. I raised a crop of potatoes the past year with nothing but chemical fertilizer at a cost of $18 per acre, and it was a good crop.

In my opinion it is better for each gardener to raise some leading crop, whatever his land is best adapted to; for instance, if his land is warm and mellow, early peas or tomatoes will thrive and bring good prices if he gets them early; but if his land is a heavy, clayey soil, let him raise cabbages, squashes, or other *late* vegetables, and not attempt to compete with those having warmer soils. Whatever you *attempt* be sure and get *good seed;* what is more vexatious than finding after you have planted and tended a nice bed of early beets, when you come to pull them that they are nothing but mongrels, so stringy as to be unfit for use? It may cost a little more at first to get good seed, but it pays to do it.

What to plant and when to plant it, requires much discrimination and judgment, for if we plant our beans and early sweet corn too early, the late spring frosts are liable to cut them off, and if too late, others will get them into market before us.

What are the most reliable varieties of vegetables, is a question easier asked than answered. I will name some of the kinds of vegetables I have found reliable in my experience. Of early potatoes the Early Rose and Bresee's No. 1, have proved good with me. Of peas, I planted for succession Landreth's Extra Early, Little Gem, McLean's Advancer and Brown's Dwarf Marrow. Of beans, I find the best succession is the Yellow Six Weeks, White Wax, Dwarf Horticultural, Concord and Lima. Of beets, the Egyptian and Dewing's are the standard varieties. Of sweet corn, I plant first Russell's Extra Early, Naragansett, Moore's Concord and Stowell's Evergreen. Of cabbages for early market, I plant Jersey Wakefield, Winnigstadt and Fottler's Early Drumhead; for late or winter use, Flat Dutch, Red Drumhead, Mason Drumhead and American Savoy. Of squashes, Summer Crookneck, Canada Crookneck, Boston Marrow, Turban, Hubbard, and perhaps the Marblehead. Of tomatoes, the Canada Victor, Trophy, General Grant, Boston Market and Tilden stand pre-eminent. I have tested these kinds of vegetables and find them worthy of cultivation.

In preparing the land for vegetables much discrimination should be used, some kinds requiring a very rich soil and very mellow, while others require but moderately rich soil, but all of them will grow better in a good mellow seed-bed. Therefore, it is best to plough thoroughly twice

and harrow or cultivate to pulverize and level the surface. Thorough cultivation is necessary in raising vegetables successfully; the weeds should be kept down at all events. I have seen a crop of potatoes reduced one-half by suffering the weeds to get the mastery during hay time, and then it cost double to dig them. Who is there who admires a weedy garden, and who is there that does not admire a well kept, orderly garden, where the fruits and vegetables thrive in their luxuriance, and where profit blends with beauty and utility? And now, as we stand upon the verge of another spring, let us prepare in earnest for the work before us; for soon the warm sun and genial showers of May will awaken Mother Earth from her lethargy and we must be prepared to drive our work and not let the work drive us, for where so many things demand our attention at once we are liable to neglect some of them.

In conclusion I would say, let us look to the Giver of every good and perfect gift for a blessing upon our endeavors and for a fruitful season.

REPORT OF THE LIBRARIAN.

To the Members of the Worcester County Horticultural Society :

Another year has closed since my last annual report was made, and the Librarian is expected to make some statement in regard to the condition of the Library. In the discharge of that duty it gives him pleasure to say that the members have used the books and different publications, furnished by the society, to a greater extent than the previous year. The Library Committee place upon the shelves of the Library many of the most valuable publications issued, in this and other countries. It seems strange that they are not more fully appreciated by the members, and that greater numbers do not avail themselves of the advantages thus provided.

The LibraryCommittee have been laboring assiduously for several years past to procure such volumes of the *Revue Horticole* as are already published, but until the present year have been unable to do so, owing to the scarcity of the volume, interrupted by the war in 1870. They have this year succeeded in obtaining the volume of 1870, together with the other volumes complete to 1876, inclusive.

Other choice and valuable books have been purchased by the Committee, which will be found in the list herewith given, comprising all books and periodicals added to the Library the past year.

Public Libraries in the U. S. A. ; their History, Condition and Management.

Special Report from John Eaton, Commissioner of Education.

Report of Commissioner of Education, 1875 ; from John Eaton, Commissioner.

Census of Massachusetts, 1875 ; Prepared under the Direction of Carroll D. Wright, Chief of the Bureau of Statistics of Labor ; 3 vols. ; first edition: from O. B. Hadwen.

Agriculture of Massachusetts, 1876 and 1877 ; by C. L. Flint ; from O. B. Hadwen.

Hand Book of British Mosses ; Comprising all that are known to be natives of the British Isles ; 24 finely colored plates, with about 200 figures ; 8vo. ; cloth ; London ; Society.

The Amateur's Greenhouse and Conservatory ; illustrated with colored plates and wood engravings ; 8vo ; cloth ; London, 1873 ; Society.

Jamain H. and Eugene Forney ; Les Roses, Histoire, Culture, Description ; 60 Chromo-Lithographics *d' apres nature* ; 60 *gravures surbois ;* imp. 8vo ; half morocco ; Paris, 1873 ; Society.

Pomological Magazine ; or, Figures and Descriptions of the most Important Varieties of Fruit cultivated in Great Britain ; 151 beautiful colored plates ; 3 vols ; royal 8vo ; half calf ; Society.

The Pinetum ; being a synopsis of all the Coniferous Plants at present known, with descriptions, history and synonyms, and a comprehensive, systematic index ; by George Gordon, A. L. S.; Society.

Transactions of Massachusetts Horticultural Society ; Part 1 and 2 ; from E. W. Buswell, Treasurer.

Schedule of Prizes of Massachusetts Horticultural Society ; from E. W. Buswell, Treasurer.

Curtis' Botanical Magazine ; by J. D. Hooker ; vol. 32 ; col. plates ; London (still publishing) ; bound ; Society.

Florist and Pomologist ; a Pictorial Monthly Magazine of Flowers, Fruits and Horticulture ; conducted by Thomas Moore ; 1876 ; large 8vo; col. plates ; London (still publishing) ; bound ; Society.

Country Gentleman, The ; vol. 42 ; 1877 ; Society.

Gardener's Chronicle, The ; 1877 ; folio ; Society.

American Agriculturist, The ; vol. 36 ; 1877 ; folio ; Society.

Agricultural Gazette, The ; London ; folio ; Society.

Gardener's Monthly, The ; vol. 19 ; 1877 ; 8vo ; Society.

Villa Gardener, The ; 1877 ; 8vo ; London ; Society.

Massachusetts Ploughman, The ; Geo. H. Noyes, proprietor and publisher ; 1877 ; from Geo. H. Noyes.

Report of the Commissioner of Agriculture ; 1876 ; from Frederick Watts, Commissioner.

Sixth Annual Report of the State Pomological Society of Michigan ; from C. W. Garfield, Secretary.

Twelfth, Thirteenth, Fourteenth and Fifteenth Annual Reports of the Michigan State Board of Agriculture ; 1873–1874–1875–1876 ; bound ; from Robert G. Baird, Secretary of Board.

Journal of Horticulture ; a chronicle of the homestead, poultry yard, apiary and dovecote ; conducted by George W. Johnson, F. R. H. S. and Robert Hogg, LL. D.; 3 vols. 30, 31 and 32 ; London ; Society.

Floral Magazine ; figures and descriptions of the choicest new flowers for the garden or conservatory ; by F. W. Burbridge ; new series 1876 ; 4to ; 56 col. plates ; London ; Society.

Revue Horticole ; Journal d' Horticulture Pratique ; E. A. Carriére ; rédacteur en chef, 1870–'76 ; 6 vols ; 8vo ; many col. plates and cuts, (still publishing) ; Society.

All of which is respectfully submitted.

JOHN C. NEWTON, *Librarian.*

HALL OF FLORA,
November 7, 1877.

ANNUAL REPORT OF THE SECRETARY.

To the Members of the Worcester County Horticultural Society :

At a special meeting of the Trustees, on the 20th day of February, A. D. 1876, it was *voted :*

"That the use of the Hall and Library of the Society be tendered to "the State Board of Agriculture, during its country meeting, which is to "commence on the Fourteenth (14th) day of November proximo."

Also, *voted :* "That in the event of an acceptance of this invitation, "there be held simultaneously, in one of the Halls of the Society, a Free "Exhibition of Flowers and Fruits grown any where within the State."

In his Annual Report for A. D. 1876, your Secretary, calling the attention of the Society to the subject, suggested that a public and social *Reception*, in the evening; whereat delegates and visitors might have an opportunity to become better acquainted with each other than would be afforded in the restriction of official intercourse; would be a suitable act of hospitality, gracefully supplementing the formal invitation. That meeting of the *State Board of Agriculture* was duly held, and, in connection with it there was a creditable display of Fruits and Vegetables in your Hall of *Ceres*. The liberal subscriptions of your members, and of some gentlemen whose largeness of heart thoroughly qualifies them for an association that they have too long neglected, provided a Banquet in the Hall of *Flora* which would have done no discredit to a far more pretentious occasion. As an attention without precedent at their meetings, it may have made an unusually favorable impression upon our visitors. That it proved so acceptable to them was, of itself, a sufficient reward for those who originated and realized the idea, and incidentally maintained the fair repute of Worcester.

The official sessions of the *State Board of Agriculture*, for the transaction of its specific business, were largely attended. And, although much, whether of essay or discussion, had no clearly strict relation to our immediate pursuits and studies, yet he must be an indifferent Horticulturist who could fail to derive benefit from the detailed conclusions of those expert and wary observers. No field of research in the broad and almost

boundless domain of Terræculture, can be so alien or remote from another, that it shall not readily assimilate the profitable instruction of practical or scientific analysis. Agricola and Horticola are equally interested in all knowledge;—whether it pertains to the mutations of the seasons; the reciprocal influences of forest and rain-fall, of desert and drought; or whether, in an humbler sphere, it limits itself to protecting home industry in the frugivorous bird and granivorous insect. Even Prohibition affects them: warning the grower of countless apples not to feed with them the worm that ravageth ceaselessly, and covering the TURDUS *migratorius* with the asinine shield of an endless *close season*. Literally may they sing, with the Poet:—

Civis Romanus sum; nihil humani
A me alienum puto.

That session of the *State Board of Agriculture* was prolific of other and more direct benefit. Under its influence, and largely stimulated by that example, members of your Society were induced to prepare essays upon the propagation and culture of the various Fruits and Vegetables; and to read them at successive weekly meetings, held throughout the ensuing winter. Many of those essays were quite elaborate, meriting preservation in some more permanent form than the columns of a newspaper. Should there be no objection, on your part, the Committee on Publication may think it advisable to incorporate the whole, or a major portion of the more thoughtful of them, in their next volume of Transactions. The Society would not thereby commit itself unreservedly to the opinions of the authors: but it would pay them the decent civility of placing their views before a larger audience, than the exigencies of daily business could permit to assemble at the time of their original delivery. Few might be at leisure to listen to them; comparatively many would "inwardly digest" them off the printed page.

Under the date of February 15th, A. D. 1877, your Secretary received an Official Notification from the Director-General of the UNITED STATES CENTENNIAL COMMISSION that the "Group Judges" had reported in favor of an "Award" to the Worcester County Horticultural Society for its "Product"—"Sixty (60) varieties of Apples" for the following reasons, viz.: "Large and interesting collection of Apples; the following "very well grown :—Leicester Sweet, Winter Harvey, Pomme Water, "Beauty of Kent, Williams's Favorite, Holden Pippin, Porter, Summer "Pippin, Mexico, Roxbury Russet, Gravenstein, Maiden's Blush, Cogswell, "and Primate. Also, for "Salisbury's Seedling," and a seedling from "Northern Spy,—both thought to be worthy of trial." Which Report, the Centennial Commission had accepted, approving its reasons and decreeing an "Award" in conformity therewith.

The next succeeding mail brought another letter from Mr. Goshorn announcing that an "Award" had been recommended and decreed to this Society, as such for "Forty-three (43) dishes of Pears, from seventeen "growers. This collection is one of very great merit, showing the in- "telligent culture necessary to produce such handsome fruit in a very "unfavorable season."

Your Secretary also holds in possession, or qualified trust, a similar Notification from Director-General Goshorn, wherein the "Worcester County Agricultural Society" is informed that it has been adjudged worthy of an Award for "PRODUCT" Pears. As the "Worcester Agricultural Society" made no Exhibit—whether of pears or cabbage-heads—its vigilant Secretary thought that there must be some mistake. In that opinion your own Secretary might readily concur, had he not been fully possessed with the Scripture that men often gather where they have not strewn.

Awards were also decreed to individual members of our Society, as follows, viz.:

William H. Earle, "for six varieties of Pears, all large and well-grown, "including the Bartlett and Beurré Clairgeau, which are exceptionally "fine.

John C. Newton, "for one dish of 'Paradise of Autumn' Pears which "are grown to great perfection."

Newell Wood (Millbury, Mass.), "for one plate of 'Doyenné Boussoc,' "very finely grown—perfect in form and color."

Edward W. Lincoln, "for one plate of 'Beurré Bosc,' and one of "'Washington,' both of which are very attractive dishes of fruit."

Mrs. George A. Chamberlain, "exhibits one dish of the 'Howell,' "very finely grown and exquisitely colored."

O. B. Hadwen, "for one plate of Ananas d' Eté, fine in size, perfect "in form, and beautifully colored."

The Diplomas and Bronze Medals which constitute those "Awards" deserve to be safely preserved, and might well find a permanent custodian in this Society.

The Report of your Secretary for A. D. 1876 contained the following passage:—"Upon one feature of this Pomological Exhibition, however, it would be impossible to enlarge in too strong terms of censure. Massachusetts, Ohio and New York were wholly unrepresented upon the Committee of Judges. The exclusion of their statues from funeral processions in the decadence of Ancient Rome, but served to recall to mind even more vividly the patriots Brutus and Cassius. And who of us, in looking through the roll of those who had been selected to adjudicate upon 'Northern Pomological Products,' could fail to note with amaze-

ment the absence of such names as JOHN A. WARDER, PATRICK BARRY, CHARLES DOWNING, JOHN J. THOMAS, and, — *clarum et venerabile nomen!* — MARSHALL P. WILDER. Honesty is an indispensable qualification for a just judge, but should not capacity also be deemed essential?" The Editor of that invaluable Horticultural Magazine the *Gardener's Monthly*, — invaluable because of its possession of him as Editor, — feels sorely aggrieved by those remarks, and takes exception to their general tenor in language which is quoted in full, that he may receive the hearing to which he is, in every respect, entitled : "It is a remarkable com- "mentary on this paragraph that the utter ignoring of Horticulture and "Agriculture in the programme of judges, and through which no judges "for these departments were appointed, was the work of a *New England* "*Man.* The judges who did serve, did so without any recognition from "the Centennial Commission, and without any arrangement for pay, "while the regular judges had both. They worked steadily at this for "from two to four days a week, for *six months*, and then were told that "as there was no provision made for Pomological judges, their services "were expected to be gratuitous. If Downing, Warder, Thomas, Barry, "Wilder, or that other gentleman, *Clarum E. V. Nomen*, of whom we "never heard before, were willing to undertake this long and weary ser- "vice, out of pure desire as pomologists, to see some justice done to the "great pomological interests, such knowledge of their disposition never "came to Philadelphia; nor we do not know that either Brutus or Cassius "ever did work like this ; but if Massachusetts have any of these noble "Romans in these days, she is quite welcome to send some of them along "next time."

"It is also but fair to state that while the pomological judges from "other parts of the country, who were called in during the heavy week "to assist, *by the Commission*, were paid $100.00 for the week's work, "and which they earned much better than some of the regular judges in "other departments, even this trifle was refused to the Philadelphia "judges for six months' work," &c., &c.

To all which the replication of your Secretary, re-affirming his original position, is that the answer of Mr. Meehan concedes everything essential. Whatsoever the sins of commission or omission whereof a "New England Man" (can that intend the "Gentleman in Politics ?") may have been guilty, the writer knows not nor cares. Massachusetts, Ohio, and New York constitute a larger territory and a more comprehensive designation. Sectionalism is the last fault that your Secretary ever supposed would be ascribed to him.

That the judges who served were not "recognized" by the Centennial Commission; that they were not paid while others, of no more conse-

quence, were; that they were worked like pack-horses, while needed, and thereafter turned out to grass; was never asserted by the writer, because the facts were not known to him; is not now doubted, because it is proclaimed by Mr. Meehan: but is not absolutely stated since, even if true, it would be immaterial to the precise issue. The *gravamen* of the charge against the Centennial Commission, in these Reports, was that such representative men as "John A. Warder, Patrick Barry, Charles Downing, "John J. Thomas, and,—*clarum et venerabile nomen*,—Marshall P. Wilder; "were not selected to adjudicate upon '*Northern Pomological Products.*'" For the Circular from Philadelphia was sectional in that it invited competition solely from Northern Pomologists. Mr. Meehan admits that his colleagues and himself served without "recognition." Were they also self-constituted Judges—*without invitation?* But it is added that no knowledge ever came to Philadelphia of the willingness of Downing, Warder, &c, &c., to undertake this long and weary service. Why should it, when these gentlemen were not asked! The truth is,—and all the casuistry between the Delaware and Schuylkill cannot confuse it,—that the actual judges did their work well. But that it might have been done better, is only a just and legitimate inference from the peculiar composition of the bench which assumed or undertook the task. Pennsylvania may have originated the *Seckel* and *Tyson:* yet Massachusetts challenges her for superiority of specimens. A back-yard in Girard Row developed the *Brinckle's Orange Raspberry:* but it is quite neglected in its birth-place, although growing and yielding to perfection in this city of Worcester. Here is the home of the APPLE; of the *Leicester Winter Sweet*, and the *Washington Royal;* of the *Holden Pippin* and the *Mother;* of the *Sterling* and the *Hubbardston Nonesuch.* Shall we have to recite the origin, within an hour's journey, of the ROXBURY RUSSETT, the BALDWIN, or the RHODE ISLAND GREENING? Cannot a country that will produce such fruits, grow "noble Romans" also, might have been a pertinent inquiry, it would seem, for the CENTENNIAL COMMISSION or even the Tail-Centre of the "Bureau of Agriculture"!

Au reste! Mr. Meehan is facetious; poking fun at defunct Romans. He is not ashamed to confess his ignorance of the nature of their "work" when in the flesh. Might he not take it for granted, if only because of their fair standing in the community, that they were engaged in Civil Service Reform? If Virgil could pen the Georgics, but a few years later, why assume so coolly on the strength of "what we do *not* know" that the noblest Roman of them all never "did work like this"! "*Facilis descensus Averni!*" May they not, now at least, thoroughly comprehend the application of bottom-heat?

Neither, in his calm Bæotia, has he ever heard of "*Clarum et venera-*

"*bile nomen.*" But that is attributable to his individual modesty, real or feigned : since, *mutatis mutandis*, any child in Germantown could readily designate "*Clarum;*" and "*venerabilis*" is presumed, not unreasonably, to have been the chief object of his own recent visit to the South of England and the Channel Islands.

Finally, it may do no harm to Mr. Meehan to be informed that, in no community are his botanical labors more highly appreciated than in this, which must be suffered to keep its eyes open yet a while longer to the shortcomings of the Centennial Commission. Years have elapsed since it was the privilege of your Secretary to move the enrolment of Mr. Meehan among the HONORARY MEMBERS of the Worcester County Horticultural Society. That action of his, meeting as it did with your unanimous sanction, has never been regretted. We can surely hope that "honors are easy."

Circulars were received by your Secretary, in close and frequent succession throughout the winter of A. D., 1876–'77, wherein a person subscribing himself "*Gen.* C. B. Norton, Late Secretary of the Bureau of the Centennial Board of Finance," offered to frame Diplomas for a consideration in money. Individual members, and even the MASSACHUSETTS HORTICULTURAL SOCIETY, were the recipients of similar communications. It is inconceivable that the Centennial Commission should lend itself to such jobbery. And yet, how otherwise can we account for the delay in transmitting the Diplomas and Medals ; unless by adopting the absurd supposition that the Mint, and the American Bank Note Company, whose facilities have been regarded equal to any demand, proved inadequate to the stress of this moderate exigency !

At a special meeting of the TRUSTEES, convened in the Hall of *Flora*, upon the 21st of April, ult., on motion of Hon. George W. Richardson, seconded by *ex-President* Francis, it was *Voted :*—"That the Secretary be "authorized to procure a portrait of the late Governor Levi Lincoln, to "be placed in the Library, of similar size and style to those of John Mil-"ton Earle, and Daniel Waldo," now in the enjoyment of the Society.

It was an unalloyed pleasure to execute that commission. The portrait has been procured and is suspended in this Hall of *Flora*. Of its merits you must be the severe judges. But it may not be improper to add, in relation to its value as a likeness, that it fully meets the hopes and anticipations of those who held him dearest in life, and to whom his lineaments were most familiar.

There can be no adornment for these walls so appropriate as the Portraits of our Worthies. Towns and cities run economy into the ground, —for compost forsooth ;—and cannot afford such extravagance. But

wherewithal shall it profit the Worcester County Horticultural Society to save up income, and starve its taste for beauty and its appreciation of all the nobler sentiments? Your Secretary would earnestly commend to your consideration the propriety of securing, next in succession, a likeness in oil of the late Frederic William Paine. His name may not be familiar to our younger members. But the faithful historian of the Society will mention him as one of the Original Corporators,* and as the Treasurer of the Corporation, from its earliest organization until his death in A. D. 1869. To his fidelity and honesty may we largely attribute our present prosperity. And to no virtues, in these days of reckless or dishonest management of trusts, could an enduring memorial be more fitting.

The VERNAL EXHIBITION of the Society was unusually successful. Occurring, as it does, when the severity of Winter is rapidly relaxing, that Exhibition seems to meet the want of our natures in their impatient anticipation of bud and flower. The attendance is always large, and was especially so upon this occasion. The *Cyclamen* proved a leading attraction; showing that the efforts of the Society to encourage the cultivation of this charming house-plant are beginning to be crowned with success. Very noticeable were some seedlings of Mr. Auguste Le Duc (gr. to P. L. Moen, Esq). A specimen plant from Hon. Stephen Salisbury was also conspicuous, with its profusion of bloom. Some shapely plants of *Azalea Indica* appeared upon the tables, as if to show that their production may be independent of the offer of Premiums. For long years did your Secretary vainly proprose an award for the best six Azaleas. No sooner was that cup otherwise bestowed than the Azalea, so shyly coy, puts in its blushing appearance. It is to be hoped that a plant of such exquisite beauty, which is so much easier to grow than the multitude with which our ladies choke up their windows, may at last command the earnest devotion that it never failed to merit.

The *Weekly Exhibitions* of the Society were resumed, after the unfortunate intermission of a year, and have been continued throughout the summer. Sparsely visited at first, the attendance upon them gradually increased until, towards their close when the ANNUAL AUTUMNAL EXHIBITION was imminent. the Hall of *Flora* seemed too contracted for their convenient accommodation. It is not the easiest thing to resume habits and practices long laid aside. But enough was accomplished, although our fair florists did not appear in quite their pristine force, to make it evident that, in this direction lies our path of useful progress. So only, in fact, can the Floral Department of Horticulture receive, at our

* There were but four (4) named, in all:—John Green, Anthony Chase, Frederick William Paine and George W. Richardson.

hands, its meed of equal and exact justice. Flowers are perishable and their beauty and fragrance evanescent. A few species may present an almost changeless charm, for successive exhibitions, but ordinarily the laws of Nature are inexorable, constraining the lovers of continuous bloom to cultivate a variety that they would not otherwise affect. And that constraint, carrying with it burdens of its own, it should be our privilege and pleasure to recognize and alleviate, so far as may be within our power.

Do we then offer a sufficient pecuniary recompense for the earnest interest and zeal to which we are so often indebted for the attractiveness of our Summer Exhibitions? For that visitors are drawn thither by Plants and Flowers, and not by Fruits, as a rule, must be obvious to the most casual observer. Yet worthily to fill one of our Flower-Stands which, in our aim at the highest excellence, is the sum of our present requirements, compels our contributors to sacrifice their daily, home enjoyment. Their best specimens must be ruthlessly severed; to be spoiled in all likelihood; upon which otherwise their eyes might have gazed until

"Dazzled and drunk with beauty."

Hours must be spent in displaying them to the best advantage, for is not skill in arrangement to be considered in the decision of relative merit? The plaudits of visitors are bestowed upon contributors, should the weather be pleasant enough to coax their attendance; and no counter attraction solicit, of stronger magnetism. But what return is made by this Society for so much devotion and toil? Why, the barest pittance to but two (2) out of any possible number of competitors; and not even the diplomatic assurance of our distinguished consideration to those who fail. Possibly a winner, with more than ordinary luck, might gain enough in the course of a whole Summer to justify the purchase of a barrel of Poor-Farm flour; but, even that, only by a stern self-denial of those higher grades whose excellence is so extreme as to compel reduction. Certain it is that no fortunes are to be saved up, from the Floral Premiums at our Summer Exhibitions. Nay, it is even doubtful if their aggregate sum would more than satisfy the original outlay for Flower-Seeds Your Secretary would rejoice, beyond measure, could he impress the TRUSTEES, with whom lies the establishment of Premiums, with his own views upon this especial matter. Fore-casting the future, he anticipates a period, not remote, when the lean kine and the scrub-race will cease propagation and propulsion, and there will no longer be occasion or place for an Agricultural Society—*strictly such*—in the City of Worcester. When the Town-Lots will be covered with dwellings, the chaste homes of the political elect, who are all Hayes Republicans, all Skillings Democrats! Then

indeed will *Horticulture*, its Apple and Pear Orchards destroyed, its Currant and Strawberry Plantations extirpated, see and own its dependence upon the Florist, from whose co-operation and support, only, can it derive any assurance or hope of ultimate prosperity. The window-garden will endure so long as the sun shines and woman has a roof to cover her head. *Our* constituency bid fair to last through all time; the pertinent question is—have we the wit and will to learn and heed its instructions? The world would miss its flowers; but a Horticultural Society, neglecting or false to its mission, might die and leave no sign.

Of course, no Premiums that we might incline to propose, and which the condition of the Treasury would justify, could remunerate our fair contributors for the devotion to our service of so much labor and time. But the offer of them would make our thorough appreciation more clearly evident; and that, in itself, would go far as an incentive. As it is, we expect and feel aggrieved not to find exhibited the latest novelties; forgetting that we may exact too much from limited means and still more straitened opportunities. "To him that hath shall be given," may answer for Christian philosophy. But it should be a fixed and vivid impression in our minds that *Flora* is a heathen goddess; to whose worship we must individually contribute, that the smoke of the sacrifice may ascend within her shrines. A judicious revision of our Premium-Schedule, by which any superfluity assigned to the purposes of our ANNUAL AUTUMNAL EXHIBITION shall be diverted to the more ample and satisfactory maintenance of Floral Exhibitions throughout the late Spring and Summer, commends itself to my deliberate approval and is most earnestly advised.

The *Summer Exhibition* of ROSES and STRAWBERRIES was a repetition of that of last year, in one of its most important features. The books of the Secretary contain the following record under the date of June 29th, A. D. 1876:—"There was no entry of roses, and of course no award." Should it be urged in explanation of this utter failure, that the Exhibition was held, in 1876, at too late a date for such a perishable flower, the reply is ready that there was but a single exhibitor in 1877, when the character of the season was such that the competition, in the class of Roses, had to be anticipated upon the 21st of June. A solitary stand, comprising thirty-one (31) named varieties represented the only attempt to fill this abhorrent vacuum in nature. What has caused such evident neglect of the Queen of Flowers in recent years, by the florists of this Society? So late as A. D. 1874, and upon the 2d day of July at that, there were five separate stands of ROSES, by as many different contributors, not to mention the numerous vases and bouquets of that delicious flower. It cannot be indifference or lack of appreciation. Is it laziness,

that contents itself with the cheap thrift of Coleus and Geranium and declines an arduous contest with pretty much the entire insect-plague? But then, why not plant and grow the Rose in the faith of *Rusticus*, as expressed through his Committee in the General Court; trusting blindly to the *English Sparrow* and the *Turdus migratorius*, and saving the sweat of the brow for nocturnal wrestling with the arduous "work" of the Grange! That industry which will not try to rescue the Rose from its numerous foes, must necessarily fail to maintain an advanced position in the ceaseless strife which the forces of Nature are ever waging to deteriorate and impair. The florist who ignobly abandons the culture of the fittest, need not expect that its survival will be measured unto him in the vicissitudes of the seasons. And he must be prepared to take an inferior rank, in his profession, who contents himself with *Caladium* or *Lycopod*, neglecting or indifferent to that perfection of beauty and fragrance which, from the dawn of history, have established the ROSE, without compeer or rival, as the very Queen of Flowers.

The display of STRAWBERRIES, throughout their season, was unsurpassed in our experience as a Society. Varieties have been shown for as many successive weeks, it is true;—notably the Triomphe de Gand, years since, by Mr. Charles Richardson. But at no time were we ever privileged to inspect so many different kinds—nearly all good, if of relative degrees of excellence. Nature had been generally propitious, a deep mantle of snow protecting the plants, and timely though light showers encouraging and forcing production. The Colonel Cheney and Monarch of the West merited and received the attention claimed for them by their skillful grower on "Sunnyside;" and the "*sports*" from "Pine Grove" betrayed no evidence of deterioration. Later experience has, however, shown pretty conclusively that for general cultivation, in this vicinity, little is to be gained by a search for anything better than the Charles Downing and Jucunda. The white tip of the former is prejudicial to it, in the hasty judgment of one who beholds it for the first time, in ignorance of its real merits. Nevertheless, considering its quality and the facility wherewith it adapts itself to all localities, to the Charles Downing must be accorded precedence among early Strawberries. In addition to which it continues to bear until a fastidious palate craves a change of variety. And that is supplied, in unrivalled excellence, by the Jucunda. This superb berry, grown in hills, here and there occasionally in rows, kept free from runners and with the ordinary abrasion and waste of soil annually restored, is absolutely peerless. In its possibilities of universal dissemination, it is perhaps inferior to the Triomphe de Gand; but its symmetry of form and less peculiar flavor will always command the palm

for the Jucunda. Upon our clayey soils its cultivation, with reasonable attention and industry, should invariably result in success. What it can do, in the hands of those who have striven the most to develop it, in Worcester, was manifested upon the 28th day of June, ult., when Mr. F. J. Kinney exhibited fifty (50) berries whose weight was three (3) pounds; and Mr. Wm. H. Earle displayed a quart box, containing thirty-two (32) berries that tipped the scale at two (2) pounds and $\frac{1}{4}$ ounce.

Meanwhile due credit should be allowed to those enterprising growers who, whether from zeal for the advancement of Pomology, or the love of shekels, try all things that are introduced—holding fast to that which seemeth good. And who are possibly a little too tenacious of that which has hitherto only been *proved* good upon their own limited grounds.

The Strawberry season, as a whole, may be pronounced a success. It is true that excessive heat early in June stimulated the crop, but timely rains came to its aid, and secured the maturation of the berries. So far as the market was concerned, the middle-man complained that the Granger was slack in the supply of his necessities, and that the Sovereign of Industry failed at his sorest pinch. And this on the 22d day of June, after our Annual Exhibition had been held. At that date, the Charles Downing was noted as most abundant;—the Monarch of the West being next in force. But all deficiencies, in such respect, were more than made good by the slaves of toil, whose motto is "live and let live!" and who look upon an open countenance as the most apt and genial introduction to an empty belly. Strawberry short-cake may pall upon a satiated appetite, but he need never be short himself who can supplement cake enough with unfailing strawberries. And of such is the amateur Fragarian, inspired by the example and instruction of this Society.

Many years have elapsed since your Secretary began to inculcate, through the medium of these Reports, a wider cultivation and encouragement of the *Raspberry*. The bread thus cast upon the waters returned indeed after many days: but only Black-caps constituted the flotsam and jetsam. But, during the summer just passed, our tables bore striking testimony to the value of that final perseverance enjoined upon the saints. Noble displays of the Clarke, Brinkle's Orange, Northumberland Fillbasket, Hudson River Antwerp, and the Hornet, were all that could be required by the most exacting. Such fruit, if grown for the market, will create a demand where none existed before. If produced for home consumption, alone, it will supply an amount of wholesome and dainty nutriment, during the languor and oppression of dog-days, for which there can be no substitute. And, as for ruinous competition with the local supply, the fruit itself is too perishable to bear carriage for considerable distances.

The Horticultural Society of New Jersey reports that the Herstine and Clarke, at first supposed to be hardy, are really tender and of little value for the market; which, of course, leaves unaffected their worth for the table. That Society adopts the Doolittle and Mammoth Cluster for Black-caps; and the Brandywine and Philadelphia for Red varieties. This list curiously illustrates one point upon which your Secretary has never failed to give warning alike to the sanguine or inexperienced:— the matter of hardiness. He lays it down as an axiom that no variety of *Rubus Idaeus* will survive the winters of New England and yield profitably, *without protection.* They richly merit it; but the cultivator who cannot or will not bestow it, might as well give up the idea of growing Raspberries. The canes may endure for one or two seasons, apparently uninjured; but their constitution is impaired and the crop surely diminishes in proportion to this loss of vitality.

Of the kinds above specified as exhibited upon our tables, all, with the exception of the Clarke, are of first-rate quality. The Hornet is a new comer among us, and its adaptation to our soils remains to be tested. In all other respects, it brings with it a character from the skillful cultivators of our own and sister States, that leaves nothing to be desired.

The newspapers of the day, in their haste of publication and zeal to gather the earliest intelligence, are very apt to mislead. Especially is this the case in Horticulture,— a science, if such it may be called, peculiarly tentative, and whose every hazard ought not to be accepted as an exact and legitimate result. Thus, one journal,* which has ever shown a deep interest in the welfare of this Society, gave currency to the curious statement, during the last summer, that it "had specimens of second "crops of 'Davison's Thornless Black-Cap Raspberry,' and of the 'North-"umberland Fillbasket Red Raspberry,' grown in the grounds" of an active and enthusiastic pomologist, who "tells" the editor that "these "second crops are as regular and certain as the first crops." What miraculous effect might be produced upon a variety, by its simple translation from Oak Street to the Holden Line, could not be predicted by your Secretary when giving to his friend those plants of Northumberland Fillbasket. But, as they had never borne a second crop, while under his own care; nor lived so riotously in their original plantation; he may be excusable for not suspecting, much more detecting, such latent, unprecedented fecundity. Surely, some check should be imposed upon their exuberance, lest they yield still a third crop upon February 14th, or even a fourth upon the *First of April!*

CURRANTS were shown in fair, although not unusual, quantity. There is no decent excuse for the common neglect of this hardy and wholesome

* The Massachusets *Spy*.

fruit. If the average Yankee family would grow more currants it would not have to buy so much anti-cholera mixture. The bowels of children who are permitted to pluck the ripe fruit from the bushes will require no other regulation than that of Nature. The ravages of the currant worm, (*Abraxis grossulariata*), easily restricted as they are by the timely use of White Hellebore, have ceased to awaken apprehension. Why then should not the pomologist throw off this lethargy and, abating neither jot nor tittle of his interest in Strawberry, or Pear, resume the cultivation of this preëminently domestic fruit, than which, in its season, no other can be named so appetizing and welcome!

The series of experimental trials of known varieties of the Currant, and of those reputed to be varieties, referred to in my last Report as inaugurated by the Royal Horticultural Society of England, in its gardens at Chiswick, were continued during the past season. The conclusions of the Fruit Committee are of so much importance, discriminating as they do carefully between the true and false, and enabling us to guard against the reception of spurious varieties which the greed of dealers or their agents is ever seeking to distribute, that their official Report is reproduced in its concise and conclusive brevity.

RED CURRANTS.

"These were examined with great care as to their nomenclature, so "much confusion still existing among them in that respect. Of the most "approved varieties noted, the earliest and the largest is the RED "CHERRY, which has the following synonyms, viz.: Bertin No. 9; Grosse "Rouge de Boulogne; Fertile d' Angleterre; La Hâtive; La Fertile; Fer-"tile de Bertin; Hâtive de Bertin; Chenonceau; Belle de St. Gilles; "Fertile; Fertile de Palluau; and La Versaillaise.

"The RED DUTCH, which is the variety most generally cultivated in "gardens, rejoices in the following synonyms: Knight's Large Red; "Knight's Sweet Red; Goliath Fielder's Red; Palmer's Late Red; Pit-"maston Red; Pitmaston Prolific; Large Sweet Red; Bertin's No. 1; "Dancer's Selected; and Jackson's Mammoth.

"The RED GRAPE, a large bunched sort, of a pale red. Synonyms: "Rouge Transparent; Queen Victoria; Fertile de Palluau.

"HOUGHTON CASTLE, the best constitutioned variety. Synonyms: "Houghton Seedling; Orangefield.

Lost in this Ribearian Babel, well may the perplexed pomologist exclaim, in the slang of the showman: "just as you like, you little dears. "You pays your money and you takes your choice!"

THE AMERICAN POMOLOGICAL SOCIETY has failed to take decisive action in this matter, leaving the grower of Currants to call his fruit the

Cherry, or La Versaillaise, as either name may best suit him, yet neglecting to warn him that they are but synonyms, after all.

The Plague of INSECTS was never more grievous than during the year just expiring. Whether due to the dryness of the earth, which was thereby kept from freezing to any considerable depth, and to the dense covering of snow that prevented the usual alternations of frost and thaw in the Spring; certain is it that orchard, and forest, and land seemed utterly a prey to the *Canker-Worm*, the *Curculio*, the *Tent*, and *Web Caterpillars*, and the *Colorado Potato Beetle*. And most discouraging of all was the too evident neglect of obvious precautions against this invasion by our leading terraeculturists. They would spend hours, or days, perhaps, to secure a crop of potatoes, by hand-picking; nourishing the Yankee conceit which cannot make use of Paris Green because its suggestion and effectual test comes from the Western Nazareth; but their Orchard and Forest trees were denuded of leaves, before their very doors, and not a hand was raised to stay the foe. As it was here, so everywhere. A writer from the Western part of the State, says: "the Web-Worm spe-"cies of the Caterpillar is very abundant this Summer, more so than for "years. Apple-trees, Cherry-trees, Butternuts, Alders, White-Birches, "and almost every species of tree or shrub show these webs. They are "not as voracious eaters as the Tent Caterpillars; yet they make bad "work when so plenty as they are this season."

But, it may be urged, both Agricola and Horticola have been members of the Great and General Court. They remembered the consistent legislation which has protected *Birds;* and doubtless felicitated themselves upon the acute prescience that provided for the guardianship of flower and fruit by beak and talon. That your Secretary is a thorough sceptic in this particular, you have not now for the first time to learn. That scores of your associate members share in his unbelief will not astonish you. But you may not know how wide-spread is this distrust of Birds as an insect-destroying agency, and will not object, therefore, to be better informed in the premises. Says a farmer in Maryland, after enlarging upon the pains that he had been at to shelter and save every species of birds: "I can say with truth that the birds build in every tree on my lawn, "and there are myriads of birds here, and myriads of Curculios, and "myriads of cherries; and nearly every one of the myriad of cherries is "stung by the Curculio, and all the plums and gages, most of the apples, "and many peaches and pears. The large fruits do not seem to mind it, "but the puncture leaves a knot in the fruit which hurts the sale."

If he makes the acquaintance of the Codling-moth, he will find that the "large fruits" are not so phlegmatic. Another writer, in the Country

Gentleman, narrates his troubles:—"The BIRDS are the great destroyers "of small fruits. They take a part of our best Strawberries, they have "nearly swept the Gooseberries, and they have not permitted us to pick "a single ripe Blackberry in three rows of bushes. The Grapes are yet "to take their chance. The Currant-worm is the only insect worth nam- "ing that touches our small fruits, and is effectually destroyed with very "little labor. It is difficult to say what we shall do with the Robins. We "would rather meet all the insect enemies of fruit, (leaving out the Ap- "ple and Pear,) than the single species known as Merula Migratoria. "Destructive Insects and Destructive Birds have both increased together, "and without great vigilance the fruit has a hard time of it."

But says Tityrus, as he lounges idly

Sub tegmine fagi.

you have the Sparrow and need not care for the lack of relish for Insects manifested by the *migratorii*—whether Merula or *Turdus*. Truly we have the Sparrow—no thanks to those who introduced him from the "effete despotisms!" And what his character may be, among those who have had him longer and know him only too well, is thus pithily described in the Gardener's Chronicle :—

"A few months ago we reproduced some remarks from the *Bulletin* of "the French Acclimatization Society respecting the 'RAVAGES COMMIT- "TED BY SPARROWS IN ALGERIA,' where, it appears, they are exces- "sively numerous. Nevertheless, it is illegal to destroy them, and they "go on increasing at an alarming rate. In a recent number of the publi- "cation already named there is another letter on this subject, urging the "necessity of authorizing and even encouraging the destruction of these "voracious and prolific birds. Wherever there are woods or plantations "of trees, there the Sparrows assemble in incredible numbers. One "writer goes so far as to deplore the introduction of gum trees [*Eucalypti* "E. W. L.], because they harbor the Sparrows, and it is difficult to dislodge "their nests from those slender, lofty trees. Now, it is stated that on one "estate alone 200 acres of Rye were so completely devoured by the Spar- "rows before it was ripe that not a single corn was harvested; and it was "calculated that in a neighboring wood, some 150 acres in extent, there "were 284,000 nests. One colonist complained that the Sparrows had "carried away 2 tons of his hay; and from the average weight of the "nests weighed it was estimated that 10 tons of hay were carried away to "construct these 284,000 nests. Further, it is asserted that this same "wood which consists mainly of the Aleppo Pine, is annually infested "with Caterpillars to such an extent that it is dangerous to go through it "in the months of March and April, because the Pine Caterpillar is ven- "omous."

The Commonwealth is to be agitated from centre to circumference, and suffered no rest, because men will take thought of what they shall drink. But none stop to consider the hopeless waste occasioned by our Insect Foes; solacing themselves with the idea that the loss must be trivial because of the apparent insignificance of its cause. Grave legislators devote weeks to an analysis of the scratches upon the backs of our scamps at Westborough: but no concern is awakened by the pitiless invasion of crawling and winged creatures, whose countless myriads mar the face of nature, devastating it to a barren waste. "Am I *not* my brother's keeper?" We make light of the Colorado Beetle and point to the immense crop of potatoes grown in his despite. But who take account of the multitudes that have resolved to give up their cultivation, allowing the last brood of beetles to hybernate without any effort to reduce their swarms! The earth teems with them. Should Nature spare them and man despise them — what then? "Let them eat cake!" said the French Queen, when told that her subjects starved for lack of bread. In default of Plums, the Curculio finds occupation with Cherry and Peach. The Canker Worm is fairly domesticated. Can there be a doubt that the excessive voracity of the Colorado Beetle will find something wherewith to gratify itself; the cultivation of the Potato being omitted for a season, and all attempts to exterminate him having been neglected? The old Romans had a proverb that "a word to the wise is sufficient." Yet how if they are wise but in their own conceit?

It has been exceedingly pleasant to note the re-appearance of the PEACH, at our Exhibitions, in goodly numbers and in all its pristine excellence. Those of us whose memory ran back for a generation could recall the time when the Peach and Apple orchards of Worcester County were trusted for a harvest, with an assurance that was never disappointed. The virgin soil nourished trees stout in girth, and of limb sufficient to support the boys of the neighborhood, to whom it never occurred that such temptations were meant to be resisted. The trunks were healthy, the limbs vigorous — the foliage without blemish or curl. The *Cooledge* and *Crawford*; the *Large Red Rareripe* and the *Red-Cheek Melacoton* were borne in a profusion as grateful as it was generous. That this race of trees died of exhaustion,—consumption perhaps, by analogy,— cannot be doubted. Propagated from the bud they could only transfer an impaired vitality. As their stones were not sure to perpetuate their kind the variety itself might be lost. So that when, in addition to these obvious, if more or less evitable perils, was superadded the fearful frost of A. D. 1861, it is not much to be wondered at that the home-grown Peach should have become a theme for tradition. That frost, of—30 degrees Fahren-

heit,—decimated the Cherry trees and almost exterminated the Peach orchards that still lingered in existence. The few which escaped entire destruction, from propitious conditions of shelter or otherwise, were so far weakened as to fall an easy prey to the *Yellows*.

But, within a few years, it has become rapidly evident that this exquisite fruit is not longer to be neglected by the Pomologists of Worcester County. Shrewsbury, which so constantly challenged competition, may sulk and withdraw from the lists, contenting herself with past honors. But Millbury and West Boylston step to the front, and—scarcely in their rear—the Shire presents its Seedlings. Trial has not yet proved if the Singletary of Mr. Newell Wood will perpetuate itself, from the stone. The superior Seedling of Mr. William H. Willard is reputed to endure that test successfully. The very promising Seedling of Joseph C. Lovell and Benjamin Walker* merit further and thorough trial. The ground has long lain fallow and may have regained its original elements. Science, too, has advanced; and the wit of man may, quite possibly, replace and restore what was wasted by shiftlessness and unthrift.

But, if the Peach failed to yield of its increase, and was apparently threatened with extinction, our Pomologists would not yield to despair. The Concord Grape had been originated, so timely, as though its production were of itself intended to indicate the infinite possibilities which it provoked. At our late ANNUAL AUTUMNAL EXHIBITION, there were One Hundred and Four (104) Plates, comprising Thirty-Eight (38) varieties of Grapes, grown in the open air without other protection than the chance shelter of cornice or tree. Substantially ripe, their developement was due to no artificial cause. Just thirty (30) years since, A. D. 1847, when the lamented A. J. Downing published his invaluable work on "The Fruit and Fruit Trees of America," the refined gold of which subsequent editions have but served to gild, he could find only the Catawba and Isabella as objects of decided commendation, although the Diana was "said to be of superior quality." His estimate of the actual condition of Viticulture, at that period, with his bright outlook for the future, is, like all which proceeded from his pen, well worth your renewed attention:

"The varieties of native grapes at present grown, are chiefly either the "finer sorts of wild species, or, which is most generally the case, they are ac- "cidentally improved varieties, that have sprung up in woods and fields "from wild vines. They are, therefore, but one remove from a wild state, "and, as extensive trials are now being made by various cultivators to pro "duce new varieties from these, there is little doubt that in a few years we

[*NOTE.—Mr. Walker disclaims all knowledge of the Peach shown in his name, or any connection with it. It was brought to the Society from the Office of the *Evening Gazette*, and, by whomsoever originated, merits, as stated in the text, further and thorough trial.—E. W. L.]

" shall have many new native sorts, combining the good qualities of the best " foreign grapes, with the hardiness of the indigenous ones, and with also " the necessary adaptation to the various soils and climates of the United " States."

In the original edition, eleven and one-half (11½) pages were devoted to the methods of culture and the description of varieties of Native Grapes. And of such varieties, but thirteen (13) were deemed worthy of specific designation. In his latest revised edition of what he has made almost a new work, our learned associate, Charles Downing, devotes thirty-four pages to the subject of Grapes (of out-door culture), and enumerates one hundred and forty-five (145) separate varieties. At our ANNUAL AUTUMNAL EXHIBITION, in the current year, Mr. Joseph C. Lovell, of West Boylston, who has done more than our other members combined to test the comparative value and qualities of Native Grapes, and whose only recompense will most likely be the satisfaction of knowing that his work has been done thoroughly and well, placed upon the tables of the Society specimens of twenty-seven (27) varieties, grown by himself. Present difficulties there are in plenty, and others will doubtless offer to perplex and discourage the future Vine Grower. Nevertheless, the progress hitherto achieved supplies every encouragement, and lends ample assurance to the hope that the GRAPE may, ere long, yield as sure a harvest under the changeful skies of New England, as the Apple and Pear—those pet products of a century of careful developement.

By way of contrasting a quite general unfortunate experience in our own vicinity, with that obtained where the open-air cultivation of the Grape is supposed to be pursued under greater difficulties, a curious statement of the *Gardener's Chronicle* (Eng.) may deserve your notice :

" It is a somewhat remarkable fact," says that accurate observer, " that " the VINE MILDEW seldom displays itself on vines grown in the open " air. Does this arise from the hardier nature of these exposed vines, or " does it follow because they are grown in a pure, free air? We have " lately seen in rural districts, large quantities of Grapes produced on " cottages ; the culture being of the rudest, and the roots finding food " amidst those of trees, hedgerows, flowers, and indeed where and how " they can—yet not a trace of the mildew could be found."

" *O ! si sic omnia !* " is the despairing wail from the Viticulturists of Oak and Westminster streets. And yet that we may magnify even this evil, might be inferred from the language of the (London) *Garden*, in a parallel case, when, referring to the French Vineyards, it says :

" The Vine Growers in France are always complaining of Phylloxera, " or Oidium, or bad crops,—any excuse to keep up the price of wine. But " they will be much embarassed to find any cause for grumbling this year,

"as the yield will, it is said, be the most productive that has been regis-
"tered during the present century."

If the Phylloxera is becoming of little account in Europe, how shall it be worth our while to borrow trouble, here in America, about lesser afflictions? "Fret not thy gizzard!" once exclaimed the late Prophet of the Latter-Day Saints, as he was expressing the essence of modern philosophy.

Several of the *newer* Pears were exhibited by some of our members, at the ANNUAL AUTUMNAL EXHIBITION, as grown by themselves for the first time. The *Dr. Reeder*, of Mr. Moses Church, were small, sweet, of a flavor not unlike that of the Rostiezer, while less attractive in appearance than even that dull variety. The Chairman of the Pear Committee failed to identify his specimens as *Marie Louise d' Uccles* which they were generally considered. Having latterly turned his attention to a study of the theory, in connection with the practice of natural selection, in its most genial aspects, involving the affinity of species in its closest relations, it is to be hoped that he will hereafter make more account of a family record and pedigree.

The variety that your Secretary procured from Messrs. Ellwanger & Barry, for "*Souvenir du Congrés Pomologique*," and the scions of which he distributed quite freely, has continued to puzzle the very elect. Beyond a pardonable curiosity to know what we have, we need scarcely to concern ourselves on account of that which we certainly have not. The *Flore des Serres*, vol 20, pp. 66, thus reconciles us: "Souvenir du Con-
"grés Pomologique:—(Morel). Pear of first quality, ripening during
"August. Tree very productive. Fruit very large, often enormous.
"This Pear is yet a study, and Pomologists are not decided as to its mer-
"its. For ourselves, it is rather of the secondary quality, although good
"enough." But that which is merely "good enough" in Belgium, will not satisfy us in America, who accept the better in a struggle for the best.

Mr. Velette P. Townsend exhibited *Earle's Bergamot*, as usual, but in perhaps superior developement. The Pear Committee restrain themselves from expressing the mingled hope and trust that possess them, after a longer observation of this seedling. Their very confidence makes them cautious. For this reason they have discouraged its exhibition elsewhere, believing that it should first be thoroughly tested, in different localities and soils, in this place of its nativity. It succeeds admirably in Quinsigamond — yet it might fail upon Olean street, in competition with the Belle Lucrative, to bear so early or for so many months in succession.*

* Reference is intended to the unique claim advanced by Mr. F. J. Kinney, in behalf of his Belle Lucrative which commence so early and continue so late in bearing that, were they as good as fruitful, he would consider "Pear" and "Belle Lucrative" synonymes, each of the other. Oh! the Ugly Ducking!

At one of our more recent *Weekly Meetings*, *Vice-President* Hadwen displayed a number of Seedling Pears which he had received from Messrs. F. & L. Clapp of Dorchester, in this Commonwealth. These gentlemen have achieved a reputation as Pomologists that they are not content simply to maintain. The production of *Clapp's Favorite* might, it would seem, satisfy any reasonable ambition. Not so with them. They may not devolop another pear to surpass or even rival that superb summer variety; but, they can try. And hence the seedlings upon our table on the 25th of October. Specifically, there were: "*Nicholas*, a seedling "from No. 17;" "*Newhall*, a seedling from No. 12;" "*Seedling*," (not named,) "from Winter Nelis;" *Seedling* from Urbaniste." The duty of minutely describing these Seedlings may well be left for the accomplished experts of the Massachusetts Horticultural Society, whose observations of them with others from the same orchards, can be continuous and uninterrupted. Abrupt inferences from a single cursory inspection would hardly be warranted. It is, however, permissible to say that the Seedling from Urbaniste was of exquisite flavor, the flesh being of a *beurré* and melting texture. The Seedling from the Winter Nelis would perhaps rank next, if indeed any inferiority was marked.

Depredations upon the gardens and orchards of our members have been scarcely as serious as in former years. Your Secretary learns, from the Commission charged with their care, that the PUBLIC GROUNDS of the City of Worcester suffer from a wanton or malicious mischief which revels in the destruction of whatever is beyond its capacity for enjoyment. But the Horticulturist has mainly escaped ravage; even though, in frequent instances, the flagrant exposure of Quince or Strawberry has seemed to be a temptation of Providence—let alone the graduates of our Reform Schools. In fact, our associate, Mr. Charles Goodwin, claims that his fate has been that of the late Southern Confederacy:—in that his prayer to be "let alone" was not answered. But possibly neither the Confederacy, nor Mr. Goodwin, sufficiently realized that it is the prayer of the righteous that availeth much. Your Secretary tried to console Mr. Goodwin by reminding him of the instance, mentioned in the Good Book, where a pair were grinding and one was taken,—the other being left. But Mr. Goodwin denied that there was any grinding in his,—grist and toll alike were taken, and not a pear was left between his upper and nether stones. Be that as it may!

For our general immunity we have, perhaps, to thank our associate, Mr. William H. Earle, to whose firmness of purpose is it due that the administration of justice, in this City and County, was saved from grave reproach. That gentleman would not condone the offence, nor suffer its

memory to be outlawed. Straw-bail has done its appointed work. But the vigilance which ensured a merited conviction will see to it that, neither by chicanery, nor evasion, shall justice be ultimately defrauded.

The property of the Society is in excellent condition, having been put and kept in thorough repair. The immediate charge of our several Halls has been under the supervision of Mr. John C. Newton, to whose personal fidelity and industry the Society owes it that its property is maintained in such perfect condition and order. The material improvements in the appearance and convenience of the Stores, upon the main floor, which were suggested in my last Report as probably indispensable, met with the approbation of the TRUSTEES and were finally effected. It is pleasant to reflect that these improvements were made of our own accord, and without a formal application from our tenants. It should be our aim ever to manage our relations of business so that they shall become, neither a source of provocation to our tenants, nor of annoyance to ourselves. Having accommodated our fixed rents to the pressure of times which were at least as onerous to us, as to those whose legal obligations were cheerfully relaxed, we may be pardoned for felicitating ourselves upon the manifest evidence and conviction that this corporation possesses a soul. Our liberality may, or may not, be appreciated ; most likely not,—since gratitude is defined as a lively sense of favors expected. That, however, need not concern us, who have governed our actions by an exact sense of justice.

The *Income* of the Society, during the past official year, as will more fully appear from the detailed account of the Treasurer, has been somewhat reduced. This diminution, however, was largely due to the disuse of the Hall of *Pomona* by the Protestant Episcopal Society of this City, which withdrew its congregation and worship, as soon as possible, from the insidious influence of our heathen devices and emblems. Let us hope that no budding innocent was enticed from grace through the seductive wiles of *Pomona !*

Especial care has been used, by your Committee, to make the modes of egress from our Halls safe beyond a question. To this end the doors were re-hung, so as to open outwards. The descent to the street is by a broad and short flight of stairs ; and of course escape from accident or danger would be easy and swift. These measures of precaution were adopted of our own volition. After they had been some time completed, a notification was received from officers of the Commonwealth, that such provision for the security of the public ought to be made. Should those vigilant guardians of the popular safety contrive, or even attempt, to obviate the perils inseparable from the use and occupation of other Halls with which our own is forced to compete ; whose narrow and successive

flights of stairs would be so quickly choked by smoke and panic-stricken fugitives, our TRUSTEES would not be so selfish as to object.

The Annual Report of the Fruit Committee of the MASSACHUSETTS HORTICULTURAL SOCIETY, for A. D. 1876, (the latest published,) treating of the display of APPLES, contains the following remarks, that should be of interest here :—

"At the Annual Show, there were no prizes offered for collections, as "has been the practice in past years, but all prizes were offered for single "dishes. In making out the Schedule, the Committee selected all the "varieties that were grown to any extent, and offered prizes for thirty-"eight different kinds, proportioning the number of prizes to the value of "the variety for all purposes according to their best judgement,---to the "best and most valuable, four prizes, and to those of the least value, two "prizes. The Committee are aware that this was a great change, but be-"lieve that it was for the best interests of the Society, and also of the "exhibitor, and think that it has given general satisfaction."

Again, under the head of PEARS, the Committee say :—

"PEARS.—The season has been very favorable for this fruit, and the "exhibitions during the season have been superior to the average of the "last few years. The change in the offers of prizes, from collections to "single dishes, as spoken of in apples, has been applied to pears ; and we "think it a great improvement as the dishes of each variety are arranged "together, and if a person comes to get any information in relation to "any particular variety, he can see for himself how it succeeds in Cam-"bridge, Worcester, Concord, Revere, or any other part of the State, and "judge what variety will do best in his location. Another reason for the "change is that it gives the Committee a better opportunity to judge cor-"rectly of the different varieties." * * * * * *

"The display of pears at the Annual Exhibition was not as large as on "some former occasions, but we think that, considering the quality of all "the fruit on exhibition, it was one of the best, if not the best ever made "by this Society. The new rule of offering prizes only for single dishes, "is probably one reason for there being so little inferior fruit.

As this practice was adopted from our Society, we have reason to congratulate ourselves that the Massachusetts Society approve it in actual operation. A very few of our own members were, at one time, inclined to doubt its wisdom, and possibly more than a little inclined to distrust its application. The attempt to draw out collections of Pears, once more, by the offer of premiums at individual expense, was not so signally successful as to encourage repetition. And the fact that the proponents of those premiums, being competitors themselves, reserved their best specimens for entry under the distinct division into varieties, as required by the Society, would appear to indicate that their objections were not very tenaciously cherished. At any rate, the facts are all with the new system. For whereas, in the Centennial year of plenty, thirty-five (35) contributors placed two hundred and fifty (250) plates of Apples upon our tables, in this last year of dearth there were thirty (30) contributors, with

one hundred and five (105) plates. The character of the season, or its being the *odd year*, might materially reduce the crop ; but, even with those drawbacks, there were only five (5) less exhibitors without something to show. In PEARS there was an absolute increase ; there being three hundred and ten (310) single plates in 1877, against two hundred and eighty-four (284) in 1876. Not a striking proof, certainly, of any dissatisfaction with the policy of the Society, on the part of that wide membership whose wishes should ever be consulted ; as they must, when decisively manifested, become a rule.

Should it be your desire to encourage the introduction of novelties—whether of Flower or Fruit, you could happily achieve that aim by the proposal of Prospective Premiums. Such were offered, for many years in succession, during which no claimants presented themselves. But the element of chance enters largely into the production of valuable varieties from the seed ; perhaps too much so, to warrant a hope of such development from our own members, few of whom are so situated as to be able to devote to it the requisite attention and time. Yet we might reap where we have not sown. And a sure return could be anticipated from an offer of prospective premiums, which, not restricted to the production of seedlings, should comprehend the cull and pick of all novelties from bud or scion. This, indeed, would involve little more than another mode of importing scions at the expense of the Society. And it might be difficult to give a good reason why the Society should not even do that !

Our ANNUAL AUTUMNAL EXHIBITION was partially, by no means suitably, appreciated. This should not be construed into a complaint that the pecuniary returns from admission fees, etc., were inadequate, since the TRUSTEES deliberately and wisely established the charge for admission at a merely nominal sum. But to the fact, each year more painfully evident, that the Cattle Show, or Pomological Exhibition, pale in attraction, and that the chief inducement remaining to visit them is simply weariness of all else. A close student of human nature opines that the faith of the American people in the permanence or stability of any thing, was rudely shaken when an armed hand was raised to destroy their political fabric. The facile temperament, so lightly amused, has grown exacting and querulous ; and, if dissatisfied for any considerable time, subsides into chronic discontent and ennui. This may well be a result of lost faith.

In our own case, however, other fault is found, more superficial and of easier remedy, whereof it would be sheer affectation to pretend ignorance, it being a theme of quite general comment. It is claimed, with what justice you must determine, that our whole system of *entry* and *award* is so defective as to work injustice ; and that the receipt of its due by merit is as much a chance of good luck as of careful discrimination. In all this

suspicion—prejudice if you prefer—lurks doubtless much injustice. It is a much mooted question—one that the mere *ipse dixit* of any one by no means settles—whether an entry should be indicated by numbers rather than names. And almost a miracle would be needed to provide you with Committees, whose tireless service and adequate knowledge should be at your beck and call, frequently until midnight, without even the poor retainer of rations, or the prospect of most meagre pay. Nevertheless, dissatisfaction exists ; nourishes itself upon chaff, if you please, yet starves not—and becomes alike contagious and infectious. This dissatisfaction, as your Secretary has been directly informed, withholds many from contributing to our Exhibitions, and threatens to deter more. Shall we dispel such suspicion,—allay this discontent ? And if so, in what most effectual and thorough manner ?

After mature reflection, your Secretary can think of and suggest no other sufficient way than to invite a number of gentlemen from without the County to occupy the position of judges. Doubtless some of the accomplished experts of the MASSACHUSETTS HORTICULTURAL SOCIETY might be induced to assume those functions. Their impartiality could not be challenged, and their competency would be established by the simple fact of their appointment. The expense to this Society should not be considered, in comparison with the general contentment to be produced by such action on the part of your TRUSTEES. A furlough from onerous labor might be grateful to those of your number who have not spared themselves, hitherto, in a thankless service. It might be found, after all, that the accuracy of human judgement is less contingent upon locality than some have imagined in their disappointment—and that fallibility may render imperfect verdicts as well from the banks of the Charles, as from the headwaters of the Blackstone. The wife of Cæsar must not even be suspected. Let it be our ambition and fixed purpose, so to order our policy that each one of our decisions, whether of our Committees or of the whole body of the Society, shall be accepted as just merely because we ordered and approved it. Nor would it be matter for regret if thereby the members of our *Committee of Arrangements* may be left free to attend to their especial duties. Simply to locate from five hundred (500) to a thousand (1,000) distinct plates, or articles, in their proper positions, is a sufficient task for all who are likely to apply themselves, in the hurry and confusion of an Exhibition, to that arduous if indispensable business.

Which is all respectfully submitted, by

EDWARD WINSLOW LINCOLN,
Secretary.

WORCESTER, MASSACHUSETTS,
HORTICULTURAL HALL,
Nov. 7, A. D. 1877.

TRANSACTIONS

OF THE

WORCESTER COUNTY

HORTICULTURAL SOCIETY,

FOR THE YEAR 1878;

COMPRISING

A CONSIDERATION OF

TILLAGE, INTRODUCED BY VICE-PRES. HADWEN, PAGE 5
GARDEN VEGETABLES, " " SYLVANUS SEARS " 11
ORCHARD FRUITS, THEIR CULTIVATION, STORING AND KEEPING, INTRODUCED BY JOSEPH C. LOVELL, " 16
INSECTS AND OTHER ENEMIES OF FRUITS AND FLOWERS, INTRODUCED BY F. J. KINNEY, " 21
THE TWELVE BEST ANNUAL AND PERRENNIAL FLOWERING PLANTS, INTRODUCED BY MRS. THOMAS L. NELSON, " 26

ALSO,

THE ANNUAL REPORTS OF THE SECRETARY AND OF THE LIBRARIAN.

WORCESTER:
PRINTED BY EDWARD R. FISKE.
1879.

NOTE.

Acknowledgements are due to the *Spy*, and the *Evening Gazette*, (emphatically the latter), for their full and precise Reports of the Weekly Meetings and Discussions, without whose essential aid the summary herein published would have been impossible. The Committee especially aimed to cover topics that were not embraced in former "Transactions."

E. W. L.

Horticultural Hall,
January 14, A. D. 1879.

TILLAGE.

Considered by the Society, January 17th, A. D. 1878.

The subject was to have been introduced by Calvin S. Hartshorn, Esq., but he was unavoidably absent. Vice-President Hadwen was therefore called upon to fill the gap, and responded with his usual good will. He said the foundation of tillage is ploughing, and the question of deep or shallow ploughing first presents itself, but here fixed principles cannot be laid down. On strong soils and with abundant manure, deep ploughing is desirable. He had ploughed his farm all over, running a second plough in the furrow of the first, and the results were various. It is well to plough a sod under deep, but he would plough manure in lightly; for roots he would plough manure in deep and then plough again to mingle the manure with the soil. Thorough ploughing is more important than deep ploughing. A good seed-bed is the end sought, and after ploughing there must be other manipulation. For corn he would plough in the fall, and spread the manure on the top in the winter, harrow it thoroughly in the spring, and put in the seed. His experience was less favorable with ploughing manure under and then putting more in the hill.

Mr. Sylvanus Sears differed in regard to the spreading of manure in the winter. He had spread in the spring and harrowed for corn, but with poor results. He favored ploughing manure under, rather lightly; he cited bad results from ploughing manure in too deeply, and said it was admissible only when the soil was deep and manure plenty. He praised the Centennial plough of the Ames Plow Company, and said its leaving the field flat instead of in lands is a great improvement. Farmers often are mistaken in regard to their depth of furrow, getting only five inches when they think they see seven. Various soils require differing ploughs, —a sandy soil breaking from the mould board almost without effort, while stiff soil requires a special plough to properly pulverize the land. For old land adapted to horticulture he would plough a narrow furrow and be sure and not cover anything up. Cross ploughing is here very desirable. He condemned the old-time harrow, which drags down the soil and makes it compact; he contrasted this with the Fish and the Share's harrow, which lift up the soil and leave it light; for deep work he favored the Fish har-

row. A roller to mash the clods is often desirable after the soil has been well stirred. He would stir the soil all he could afford, and quoted an old writer to the effect that soil might be so thoroughly stirred as to almost remove the necessity for manures. He would have earth frequently stirred during the growth of a crop when possible, to prevent packing and crust by sun and rain.

Mr. James Draper favored deep tillage, and related his experience with sub-soiling ; he first ploughed seven or eight inches, then cross-ploughed the same depth, and then followed in the same furrow with a sub-soil plough, stirring the soil, but not lifting it ; the soil was opened nearly twenty inches, a heavy soil with hard clay subsoil ; he applied forty-five cords of manure to the acre, and had wonderful results, with strawberries for two years, and subsequently with trees. It was eight years ago, but the result is still manifest.

Mr. F. J. Kinney was called out by a remark that he didn't plough at all ; he said he did not use a plough because he was on a rock where he couldn't plough ; he had seen good fields ruined by deep ploughing,— one a stiff clay soil, twelve inches deep, with four oxen, and since it had not produced enough to feed those four oxen ; it is cold and sour, and will neither grow corn nor grass. He thought much is lost by too deep ploughing ; the work should be on surface in pulverization ; a good seed-bed is the desideratum. The best carrots he ever saw were grown on a hard gravel sub-soil ploughed only four inches deep, and the crop had to be dug with a crow-bar ; he had noticed that the best plants are often found in a hard path which has been trodden for years ; his strawberry crops have stood the drought best when the soil had been stirred only three or four inches ; the sun and hot air penetrate just as far as the soil is stirred ; below there is a retention of moisture.

Mr. Wm. H. Earle said it is an important question whether the soil should be stirred deeply or not ; if the last speaker is correct, almost all agricultural experimenters are at fault. He favored frequent stirring of the soil during the growing crop. Another point is that over forty per cent. of a crop comes from above the ground rather than from the ground, but some of this finds its way to the plant through the loosened earth and the roots.

Mr. Ephraim Chamberlain said various soils need differing methods ; as a rule a man who has a mellow soil will go deep, but with a rocky soil he will plough shallow ; his best experience was with heavy manuring and shallow but very thorough pulverizing ; he had harvested fine crops, just in proportion as he had attended to pulverization.

Mr. Earle said his strawberry fields were ploughed very deeply, and he got last year $1500 worth of fruit on three acres. He would not spread manure on soil until after it had been thoroughly ploughed.

Mr. Joseph Lovell said Mr. Earle's land has been ploughed very deep for eighteen years ; he had put eighty cords of manure on three acres, and then used phosphate in the hill, on this soil, before Mr. Earle had it.

Mr. Chamberlain said with fifteen cords of manure to the acre he expected to get double crops for three or four years. He related instances of heavy manuring and deep ploughing, where the deep ploughing had ruined the field.

Mr. Sears cited instances of deep ploughing, one where four inches of gravel was brought to the surface, and although there was plenty of manure the crop didn't come ; the fault was that the soil wasn't fit to plough deep. In another case, a deep alluvial soil, deep ploughing proved very satisfactory ; it requires discrimination ; a meadow requires different treatment from a shallow soil on a side-hill. In one case he had had good success with ploughing on a stony soil from three to five inches deep, and the land was in good heart fifteen years afterward.

Mr. F. M. Marble said the question of deep tillage depends on the soil; with a rich subsoil the plough should go deeper every year, but as it is brought to the surface, it should be thoroughly incorporated with the top soil, and the whole well manured ; it requires time and manure to utilize deep tillage; plant roots will go as deep as the soil is fitted for them.

Mr. Hadwen said the question of deep or shallow ploughing cannot be decided by rule; the nature of the soil must govern that. He then suggested the application of manures as a part of tillage, and recited various experiments in this department, tending to the idea that the best results came from incorporating the manure through the four or five inches at the top of the soil.

Mr. Kinney detailed the growth of strawberry plants on hard walks of coal ashes.

Mr. Newell Wood of Millbury asked if good results from shallow tillage on an old pasture were not owing to the fact that it had been fallow a long time. Mr. Sears, who had cited the instance, said this might be partially so, but he was sure that the crop was not all owing to that cause. He favored a rotation of crops, and said perhaps the ash-walk of Mr. Kinney had been disintegrated by long exposure, and contained nourishment for the plant.

Mr. Thomas Harlow of West Boylston asked for details of Mr. Chamberlain's cultivation, who replied that after ploughing shallow he manured ; then he harrowed twice, and then used a white birch bush just as long as he has time, and then he bushes the field again just before the corn comes up. After the corn is up he puts the cultivator between the rows, both ways ; he relied on the bush as the very best pulverizer.

Mr. Sears said he did not believe in the bush ; it does not go deep enough ; he prefers twice harrowing with a Fish harrow, and then uses a roller.

Mr. Chamberlain said a rolled surface will evaporate moisture more quickly than a loose, rough one, but a bush compacts the soil about the seed while it leaves the surface rough.

Mr. Sears said just for that reason he didn't want a bush ; he wanted a smooth surface over a loose soil, and the roller gives it perfectly.

Mr. Chamberlain related his experience where he had carted a large quantity of manure over a field of corn after it was planted, and the cart track grew the best corn.

Mr. Hadwen introduced a description of an implement suggested by Mr. Ware of Marblehead,—a stone boat with slats on its under surface, which gather the clods and crushes them much better than either roller or bush, especially for finishing after seeding ground.

Mr. Sears said the implement will work well where there are no stones, but it is not adapted to this locality ; it pushes the stones along, leaves furrows and does not leave smooth work.

Mr. Merrifield, president, said he had used the implement ; it works well except where there are large stones ; the smaller stones are crushed into the soil ; he put the slats on at an angle, securing a drawing stroke on the soil, securing it easier working ; he considered it worth more than a roller. He also spoke of another implement he had made to crush manure on grass land ; it is of oak plank, five feet square, and filled with short pins of one inch iron, projecting about an inch ; it works admirably, breaking all the lumps and leaving the sod in good condition. He said every farmer must decide on deep or shallow ploughing only on the merits of each field by itself ; he spoke of Prof. Mape's ideas of subsoiling, which he had put in practice, using a share which lifted and broke the earth below the first ploughing of eleven inches deep ; ground ploughed thus twenty-five years ago and not ploughed since produces two and a half tons of grass to the acre ; he had spaded a small section of the field twelve years after, and found first about ten inches of light soil, then a shell of soil which required picking, and under that a foot of light soil ; trees and grass grew wonderfully well there ; the deep soil absorbs moisture best, and hard ground freezes most quickly. He did not approve deep soil for grapes, for the roots need the sun ; if the fertilizers are put near the top of the soil the roots will stay there. In regard to applying manure, he believed in ploughing and then applying the manure near the surface ; he would break up a field in the spring, turn the sod well under, spread on the manure, and then pulverize it ready for the crop.

Mr. Joseph Lovell advocated ploughing the manure in deep, and then putting something in the hill to give the plant a start, leaving it to find the deeper manure when it was needed later in the season. He quoted the practice on the sea-coast of trenching soil three feet deep and putting sea weed and manure at the bottom.

Mr. Draper said he would advocate deep stirring of the soil, but not the bringing up to the surface of the lower strata ; he had also trenched land two feet deep, stirring the soil and taking out the stone, but not turning it bottom side up.

Mr. Hadwen then suggested the proper time to apply manure ; he said manure evaporates but little ; the best farmers put out the manure when most convenient and plough it in when they get ready ; this is a revolution from the old system ; he said the gases which escape from manure heaps in the open field are not fertilizers, at least they are not ammonia ; their value is not worth considering ; this is Dr. Goesmann's observation ; Mr. Hadwen said it is doubtful if keeping manure in a cellar is as valuable as spreading it immediately on the soil; he was closely questioned by Messrs. Marble and Earle, and expressed the opinion that there was nothing like fresh manure for the soil ; he related his own experience in effect that compost, or well rotted manure, is less valuable than fresh manure upon the soil ; he would at this season draw the manure and spread it on the surface.

Mr. Sears said he would partly accept Mr. Hadwen's theory ; he had tried the experiment and in the same field, the same season, with part ploughed in the fall and part left on the surface until spring, and a third part spread from the barn cellar in the spring, and the latter gave the best crop.

Mr. Hadwen replied with his experience ; he ploughed in September and began putting on manure on the surface, keeping it up until snow was deep, compelling the delay till spring of finishing the work ; the manure was spread evenly, but the best crop was where the manure was put on the field in the fall and winter.

Mr. Kinney asked if hen manure and hog manure are to be treated as has been recommended for cow manure ; he thought any manure should be put where all its good can be saved ; he thought hen manure and hog manure would waste in exposure in an open field.

Mr. Hadwen said manure will not thaw so soon as the earth, and when it does thaw and liberate its elements the earth is ready to receive them ; this explains why the manure spread in the winter does not waste.

Mr. Chamberlain said a bare piece of ground forbidden to grow a crop, will be impoverished sooner than by an exhaustive crop ; he wanted to know where the elements go to ; his theory was to extract the fertility of the soil the quickest possible way, to arrest and make use of the escaping elements.

Mr. Earle believed manure lost a dollar a cord if left uncovered. Mr. Chamberlain thought winter-exposed manure would start a crop better, but it would waste in summer. Mr. Dawson would use green manure for strawberries and old manure for corn.

Mr. A. B. Lovell was not in favor of exposing manure, and referred to weighing a cord and three inches of solid and liquid manure which weighed 9800 pounds.

This closed the discussion, and it was announced that Mr. Sylvanus Sears would read a paper on vegetables, as the basis of next week's discussion.

GARDEN VEGETABLES.

Considered by the Society, January 24th, A. D. 1878.

The subject was introduced by Mr. Sylvanus Sears, whose essay, with the following discussion, are thus carefully condensed.

SYLVANUS SEARS.

He alluded to the intelligence, skill and experience requisite to the successful culture of Vegetables as important, and their absence he thought explained many failures. The question of manures and their application, the selection of seeds, and the process of cultivation, all are essential, and no rule governing these can be given, for soils vary, different plants need varying manures and varying cultivation, and what will yield good results in one place will be a disappointment in another.

He took strong ground in favor of small farms well tilled, urging that in many cases the effort spent upon ten acres, at a loss, would pay a profit if expended on five acres.

He advocated high manuring, and urged that thirty-two horse loads to an acre is not high manuring; sixty would do better. One Worcester farmer applied eighty cords to an acre, and found that it paid. Thorough cultivation was his next topic, and his idea was that careful preparation of the soil for a seed-bed, frequent stirring of the soil about the plants, and absolutely clean culture are all included under this head.

A good market is essential. Over production is dangerous, and it often results not so much from too many growers, but from a favorable season, giving an unexpectedly full crop of certain vegetables. The remedy suggested was the planting of a wide variety, thus securing a fair average result.

The enemies of the vegetable growers were discussed. After alluding briefly to the cabbage pests, he spoke at length of the Colorado beetle, the great enemy of the potato, and said he applied a solution of Paris green, one pound to the acre, and drove off the first crop; a second application three weeks afterwards completed the work, and his harvest of potatoes was quite up to the average. The solution was applied with a watering pot. In answer to a question he stated an experiment where 500 pounds of Paris green were applied to the acre, and chemical analysis failed to show its presence either in the soil, the tubers, or the stalks and leaves. He did not think there was any danger in its ordinary moderate use.

In answer to a question, which five vegetables would you recommend as the best for market cultivation? He said no advice could be given. Peas, green corn, cabbages and squashes are prominent; potatoes would probably rank first in importance.

In answer to other questions he said he would apply Paris green in water as the easiest method.

Mr. S. A. Newton said he found it easier to mix the green with cheap flour, or shorts, and apply it dry with a sieve.

Mr. G. H. Harlow of Shrewsbury questioned whether Paris green is not poisonous to the plants, and told of a neighbor who lost two cows and had others sick, from eating potato tops which had been treated with it. He questioned also whether a farmer living six miles from the city could make vegetable culture profitable. He said he earned all he got twice—once in growing the crop, and again in trying to sell the crop. He thought a man near by who had a milk route could build up a trade, but a common farmer might as well give his crop away.

Mr. J. B. Sibley said he had half an acre of potatoes; he applied one pound of Paris green in twenty pounds of plaster, and the second crop of bugs got three pounds of the green. He applied it with his hands, and gave an amusing experience of a dog which ran through the field and got himself covered with the poison, without injury.

George S. Coe of Shrewsbury said the cows which died in that town drank rain water which had been caught in buckets tainted with Paris green.

Mr. Harlow contended that the green was poisonous, and thought farmers should use it, if at all, with extreme caution.

Mr. O. B. Hadwen suggested an inquiry from experienced men on the matter of growing special crops, and leaving the insects until they are reached in the list of subjects arranged for discussion.

Mr. Geo. H. Rice spoke of the growing of onions which usually prove a difficult crop. He found them to grow best on old ground; they will not do well on turned sward; they follow carrots very well; an abundance of manure is needed; this should be spread and ploughed in lightly in the fall; in the spring the soil is pulverized with a cultivator or harrow, care being taken not to make it too mellow; he would roll the ground if too mellow; the onion grows best on the top of the ground, and the seed should be left very near the surface, almost without covering; he would sow early in April; the best results come from rows thirteen inches apart and sown so thinly that no young plants need to be removed; frequent light moving of the soil between the rows is necessary, and in May, June and July it is important to keep the young weeds down; they may be pulled in August, carefully cured and put under shelter, when they can be kept cool; there is more danger of heat than

of cold ; he keeps his crop in the barn through the winter, and frequently keeps it until April ; his soil is a heavy clay, and retentive, but is underdrained ; it is bad to stir in the spring, and therefore he does all he can to the soil in the fall ; he thought 500 bushels to the acre an average crop ; he put fifty to sixty two-horse loads or from eighteen to twenty cords of manure to the acre ; he uses a general variety of barn manure, tannery refuse, lime and salt, in a compost ; horse manure he would compost a year before using ; the lime and salt is intended to fix the maggots ; he has used them successfully for ten years, but he would not like to say they were an unfailing remedy ; he applied them by mixing in the manure and also by sowing over the field ; he did not think freezing onions would benefit them, but they may be once frozen without much harm ; repeated freezing and thawing is bad ; the point is to keep them at an even temperature ; if they freeze they should be kept covered to protect them from thawing. Many of the points were brought out by questions from various gentlemen present.

Mr. Joseph S. Perry thought the potato crop the most important, and how to get a crop is worthy of study ; experience is most valuable, and generally the best observer will succeed best ; his own plan is to plough early in the fall; the next spring he would manure liberally, eight to twelve cords to the acre, and plough lightly ; he could not cover potatoes with a horse-hoe with success ; they do not cover evenly ; two or three inches is the proper depth ; he would run a cultivator through the field in six or eight days after planting, to keep down the weeds, and this should be repeated every week ; he hoes three times, but by using the cultivator hoeing is light work. Last year he raised 1000 bushels of Early Rose, and eight hundred of Davis Seedlings ; the latter he thought the best crop ; Yankees prefer Early Rose, but foreigners choose the others. In regard to the bugs, he found it cheapest to pick the bugs, especially as he could get boy pickers cheap ; he did not think Paris green injurious to the crop, but there is a prejudice against it, and a crop will sell more readily without it ; he would "hill up" the crop lightly ; he would plant in rows, one way, and one piece of potato to every eighteen inches ; could not afford to manure in the hill.

Dea. Edward Kendall spoke of painting window blinds with Paris green ; its poison is arsenic ; he had ground it and applied it, but he had experienced no evil effects ; he would not hesitate to eat vegetables where it had been used; it might work differently with different people, the same as other paints ; he would work in Paris green rather than in white lead.

Mr. Hadwen, in a pleasant speech introduced Mr. John B. Moore of Concord, the originator of Moore's Early Corn and Moore's Grape.

Mr. Moore expressed his pleasure at the freedom of the discussion, and compared it to the reticence of the market gardeners in the State

Board of Agriculture, who, he said, if they know anything they will not tell it. He questioned the propriety of a general farmer raising a great variety of vegetables ; he said that would do if he markets his products to families, but the best crops can be got by special culture, and by devotion to special crops ; he is sixteen miles from market, and finds better profit in raising a few crops largely ; he has a strong hold on onions ; in starting new ground there is no trouble if you are generous with the manure : potash is essential ; hence wood ashes are valuable ; he got last year 800 bushels to the acre ; he put his rows fourteen inches apart ; two-thirds of the field, through a mistake, got twice as much seed as he intended ; they grew three and four deep, and too large for ordinary customers ; the true time to kill the weeds is before they come up ; he uses the new scuffle hoe, but it requires the ground to be entirely free from sticks and stones ; he gets over fifteen rods in three minutes ; good seed is important ; that raised at home is surest ; with his own seed he had no "stiff necks" or scullions.

He also gave his treatment of asparagus, of which he is a large grower ; it usually pays from $300 to $500 per acre ; he was the first to begin the crop in 1854, and now over one hundred acres are used in this crop in Arlington ; it requires a sandy soil and high manure ; the salt theory is a myth ; it is not a manure, and it is not a necessity to asparagus, although the books say so. He gave a sketch of the history of the plant, and of his own experience ; his best success has been without salt ; he has taken the first prize for seventeen years, at the Massachusetts Horticultural Society, without salt.

He also grows about 10,000 cauliflowers each year ; he uses good ground, with heavy manuring, to which he adds one hundred pounds of muriate of potash to the acre ; he gets all his seed from Italy, and is sure there is no good seed here ; his plants head in hot weather without fail ; a heavy dressing of salt will laten the asparagus crop, and will make it grow crooked ; he found the Conover a poorer variety than others ; he puts the crowns of his plants eight inches under ground, and ploughs over it ; every inch deeper makes the crop a week later ; his rows are three feet apart and plants fifteen inches apart in the rows ; he raises seed from only the plants which give large stalks, good color, and good shape ; he lets the first shoots run up to seed, so that there is no crossing with the smaller plants.

Mr. Rice said he had plants from a bed thirty-five years old which are better than any of the new varieties. In regard to cultivating onions he said he could not use the new scuffle hoe on his soil ; it is adapted only to a perfectly pulverized soil.

Mr. James Draper spoke of the difficulty of marketing vegetables ; a milk man can do well in carrying out his vegetables ; with only beets,

tomatoes and squashes, he could find a market with the dealers ; potatoes alone are a good crop, and there is always a market : his advice was to stick to two or three varieties.

Mr. Rice said his experience is best with large quantities of a few vegetables.

Mr. Draper spoke of the garden crops brought here from abroad, and said this is one of the best markets, if the farmers would only improve it intelligently.

Mr. Merrifield spoke of the importance of good seed, and also of the need of energy in improving and occupying the market.

Mr. Hadwen spoke of the necessity of good seed, and suggested that Worcester farmers might find their interest in raising each some one variety of seed, with a special view to securing pure seed and of the best quality.

Mr. Sears related his mishaps with so called choice seeds, and expressed the opinion that local growers should grow their own seed.

Mr. C. L. Hartshorn said he had dipped into almost all vegetables in connection with his milk business, but was now holding up ; consumers have been reduced and producers have increased of late, and he finds it almost as profitable to feed his vegetables to stock. He has grown tomatoes for years ; Boston Market is his dependence ; Trophy he discards ; Gen. Grant and Canada Victor do fairly, but are not reliable ; with Tilden he has not had as good luck even as with Canada Victor ; the Hathaway looks well, and if picked before fully ripe is excellent ; for growing in a family garden it has no superior ; he would trim the vines at the ends, but would leave vines enough to shade the fruit.

Mr. J. C. Lovell said he always sets his plants the last day of May or the first day of June ; if set earlier they will fail. Messrs. Draper and Sears concurred in this view.

Mr. Sears advocated well rotted manure and superphosphate for fertilizers ; the latter gives earlier and better fruit, while the former makes prodigious vines. His pet variety is the Canada Victor ; it ripens a good quantity early, while other early varieties ripen only an occasional specimen.

The value of various vegetables for stock was then briefly discussed. Mr. Sears said he considered cabbages worth half a cent a pound for feed for milk. Mr. Merrifield said he had, after experiment, decided in favor of mangolds and sugar beets for stock. Mr. Hadwen said he was strongly in favor of roots as a change of feed. Mr. Sears concurred, but objected to their excessive use. Mr. Moore said his neighbors fed only English turnips, tops and all, which he thought a safe way of watering milk. Mr. Merrifield said he preferred cotton seed meal, Indian corn and shorts as more economical than roots. The meeting then dissolved.

ORCHARD FRUITS.

THEIR CULTIVATION, STORING, AND KEEPING.

Considered by the Society, February 17th, A. D. 1878.

Mr. Joseph C. Lovell, of West Boylston, introduced the subject. He pointed out the different circumstances of the fruit growers, for home use or for market, the single tree or the large orchard, the early summer or the long keeping varieties. He said one general rule is that growers must study. The question of fertilizing is important, for too little and too much are alike disastrous; insect ravages need constant watching; the soil for one variety may cause others to fall, and various methods of treatment are only adapted to certain varieties. He favored attempts to improve the quality of some approved varieties, rather than to produce new varieties, and he suggested the question whether raising seedlings from carefully selected healthy trees, may not be a help toward eradicating blight.

He favored only moderate fertilizing, for too much will enfeeble the tree. Varieties can only be selected to adapt the crops to the individual want; no general rule can be given. He gave a caution in regarding planting, that there should be abundant room for roots, and the tree should be set as deep as it stood in the nurseries. The best soil for Apples and Pears is a strong deep loam on a hill side; the soil should be frequently stirred about young trees. He would gather winter fruit only when it is fully ripe, if quality be desired; for storage he would select a dry cellar with a uniform temperature of from 34° to 36°. He urged every tree planter to be sure and give clean culture, and a fair chance to his trees, before condemning the nurserymen or the stock. In answer to questions he said he could not recommend either apples or pears for a crop to the exclusion of the other, but would advise a grower to have good stocks of both.

Mr. J. E. Phelps said fruit trees should be headed in and the roots carefully pruned in transplanting. To reset trees with the roots jammed off with a spade is folly. He would set no trees over two or three years old ; larger trees will be the smallest in ten years. Peaches should be set one year from the bud and pruned so that only a "stub" is left. He would prune the roots, even if the tree is taken up without injuring the tree ; the cut portion will throw out many new and vigorous roots.

Mr. Sylvanus Sears gave his experience ; in moving young trees he would cut off the roots not over two and a half feet from the tree ; he had observed if rough wounds on roots are left there is a decay and injury ; a smooth cut root will heal quickly and throw out fresh rootlets. He had transplanted ten year old trees and grafted them immediately, with good results. He favored the growing of both pears and apples ; by judicious grafting the barrenness of "the odd year" can be overcome ; early apples, if properly cultivated will bear every year ; one of his Early Williams trees has borne twenty-one years in succession. He believed in apples as a crop, even with the "odd year" and the trouble from insects. It costs less in proportion to harvest a large crop than a small one.

Mr. Phelps thought it would be better, in transplanting large trees for grafting, to let them grow a year before grafting. In storing apples he had the best success in picking them in a warm day in September, and putting them into the cellar while they are warmer than the cellar ; there is no need of waiting for the fruit to "sweat" before putting in the cellar.

Mr. Lovell said his view is that "odd year" fruit is an accident ; there is no rule by which the habit of trees can be changed. In regard to putting apples in the cellar as soon as picked, he thought it would only be safe in a dry cellar.

Mr. Phelps said he would do it with a cellar either damp or dry ; he had tried both. He also defended the "odd year" idea, that it can be changed by grafting ; he stored his apples in barrels without heading up, and left them open for a few weeks.

Mr. Joseph Lovell gave his experience with "odd year" Baldwins ; he bought six trees in 1845 for "odd year" trees, and only one proved true to the name.

Mr. Sears said a tree, a part of which was grafted an odd year and part an even year, has for fifteen years borne in the same manner ; the grafts set in the odd year fruit in the odd year, and *vice versa*. His practice is to pick his apples and put them into barrels and leave them in a storehouse, above ground ; he was sure all apples sweat after picking ; he had tried to keep apples in large bins, but the result was unsatisfactory.

Mr. F. M. Marble said there is a difference in the keeping qualities of apples, in different years, irrespective of their storage. He believed good tillage land cannot be profitably used for apples ; but the trees may be set on the north side of fields and against the roads with profit. His experience is in favor of pruning both top and root at transplanting. He believed pears are more profitable in this vicinity than apples, and thought they can be raised as cheaply.

Mr. Phelps opposed pruning in the spring ; the best time is from the 4th to the 24th of July, while the tree is resting between its first and second growths ; he urged experiments on the same tree.

Mr. Draper said the best rule for nurserymen is to prune when the knife is sharp ; on young trees he would do all knife pruning early, before the buds start ; if large cuts are made the wound should be covered with shellac. In regard to resetting trees he would always set a tree two or three inches deeper than it stood when taken up. He favored setting small trees, for they will do much better. He also said too often customers insist on having trees taken out of nursery rows, when it is impossible to take up one without spoiling three, when, if the trees could be taken a whole row at a time the removal could be much more safely accomplished.

Mr. J. C. Lovell reiterated his opinion that trees ought to die if they are set carelessly and the ground about them is allowed either to fill up with grass or weeds ; the nurserymen are not generally to be blamed.

Mr. F. J. Kinney said apples can be grown at a profit in this vicinity ; he knew a three acre lot, two sides of which has apple trees, which give better returns five years in succession than the rest of the field, although it is in so good condition as to bear ninety-two bushels of wheat. He opposed spring pruning, especially for large trees ; the only time is when the tree is at its fullest growth. He was a full believer in odd year Baldwins ; he knew of hundreds of trees which are sure for a crop every odd year ; his own "odd year tree" is certain, and scions taken from it give odd year trees, whether grafted the odd or the even year.

Mr. Draper made a distinction between heading in and pruning ; the first should be in the spring ; the latter between June and September.

Mr. Phelps would head in trees when set, either fall or spring.

Mr. J C. Lovell favored severe heading in in the spring before the buds start ; he would leave autumn set trees till spring. In answer to a question, he said barn-yard manures will promote tree growth ; the patent fertilizers are good also.

Mr. A. B. Lovell said he had a good orchard set in a sand bank ; over ninety out of one hundred trees lived, and they have made capital growth ; the land has been generously manured with barn-yard manure and wood ashes.

Mr. Draper would give trees wood ashes and bone ; if stable manure is used it should be applied in the fall.

Mr. A. B. Lovell said he had raised corn on his sand orchard eight years running, besides gathering the apples.

Mr. Marble reiterated his statement that good land will not give good returns in apples ; in twenty-five years experience he feels sure it would have been cheaper to let the land alone and pay the taxes ; he could get no crops under the trees, and the bother and expense of pruning, bug killing and harvesting cost more than the income during this period.

Mr. Sears favored setting trees about the margin of fields ; the roots were under the walls, utilizing all the ground, and the trees thrive better than in a fully set orchard.

Mr. Newell Wood, of Millbury, said Mr. Marble's trouble was that his soil needed underdraining. He thought it poor economy to set apples about the walls ; they do better in an orchard where they can be tended. He considered a sheltered site for an orchard important ; after trees come into bearing, ploughing in of clover is one of the best fertilizers ; he spoke heartily in favor of this method of fertilizing for general crops ; he had observed that his orchard bore excellent sized fruit, even in the dryest season, which he thought due to the clover. For pears he applied manure from the barn cellar, ploughing it in the fall ; he would prune whenever he saw a place to prune ; the knife should always be within reach. Peach trees need heavy pruning late in the fall. He would cut off large limbs in the fall, as there is less liability to decay.

Mr. Joseph Lovell said if Mr. Wood's practice of pruning was in ues there would be no occasion to cut off large limbs.

Mr. Sears had had good results from November and December trimming. To trim in the summer would spoil the grass under the trees ; he had seen no important difference between winter and summer pruning if large wounds are protected with shellac.

Mr. Wood insisted on mulching young trees after setting, as of the greatest importance.

Mr. Thomas Harlow, of West Boylston, said he knew of two or three orchards where the bearing year has been changed by the canker worm. He suggested that if trees are taken from a heavily manured nursery, it will be important to give them rich food afterwards or they will make a bad showing.

Mr. Kinney spoke of a case when in a six or eight acre orchard, on a steep side hill, the owner picked every blossom for the first two years, and the result was full crops in the odd years, and the owner had got rich on one orchard, which an ordinary farmer would refuse at any price.

Mr. Sears intimated that experience has been that trees so treated after a few years get back to the general habit of bearing on the even year.

He had seen similar results where the canker worm did the removal of the blossoms ; after three years the Baldwins bore half a crop every year.

Mr. Draper said apples demand only half the manure necessary for pears.

In answer to a question by Mr. S. C. Andrews, Mr. Merrifield said leather ashes would be of value.

Mr. Geo. S. Coe, of Shrewsbury, said apples should be picked when they show signs of maturity ; this will vary with different seasons : one season his picking was interrupted by frost and snow ; when the snow was gone he finished picking, put the apples in a pile in the cellar three and a half feet deep, and two months after they were in admirable condition for shipping.

Mr. J. Frank Allen said Northern Spy, Spitzenberg and Newtown Pippins in his cellar this season, from the West, showed as severe worm ravages as though grown here ; he thought the worms have "gone West." The two first named kept well, and are still in good condition. He thought native apples have kept poorly.

Mr. Sears thought city cellars too warm for apples ; in his own cellar Roxbury Russets keep till April, and then they are in condition for market without picking over. His own fruit has kept well this season.

Mr. Draper said in full bearing years apples are so plenty that many growers pick carelessly and the price goes down. If growers will take extra pains in such seasons they will get a satisfactory reward.

Mr. Allen expressed a belief that apple culture about Worcester will pay, and related instances of good success : if the farmer takes care of his trees apples are are as good a crop as he can grow.

Mr. Harlow did not believe in setting trees in good tillage land, but only a few farms have such land ; most land is just adapted to orcharding, but it is not fit for tillage. He thought the expense of an orchard from the start will more than absorb the profits, even after they come into bearing.

Mr. Pierce, of Millbury, said he thought apples a profitable crop ; even last year, were it not for the hard times, the crop would have paid. He thought most apples are picked too green ; early picked apples are inferior in color, flavor, and in keeping quality ; fruit will keep best on the tree ; this is true even of pears ; he did not believe in "odd year" trees ; he had seen scions from "odd year" Baldwins which bear the even years, and even the original trees have reverted to even year bearing.

Insects and other Enemies of Fruits and Flowers.

Considered by the Society, February 14th, A. D. 1878.

The subject was introduced by Mr. F. J. Kinney, whose remarks, with the discussion that followed, are thus abridged :

Mr. Kinney considered that the doors to success or failure in growing fruits or flowers hung on this very text. He first treated of other enemies than insects, considering man as standing foremost on the list, by having for his main object how much money he can get out of a tree, forcing it into a premature existence and into an appearance of age by being over manured, and in any and all ways to make it tall in the shortest possible time. The fault he considered was with the purchaser, not the grower, as the latter produces what the former demands. He expressed the belief that the treatment a tree receives in the nursery to make it saleable weakens its vitality and prepares it for an easy prey to its insect enemies. Considering the insect enemies of apple trees, he first spoke of a species of sphinges as perhaps the most dangerous, because they deposit their eggs near the ground, under a piece of loose bark and out of sight of the casual observer. The young caterpillars or borers begin operations as soon as hatched, and, although one in a tree may be discovered before it has done much damage, by the chips of his trade, if there are several eggs deposited around the tree and all hatch, the damage may be considerable in a short time. Probably more trees are spoiled by them than by all other insects combined. They seem to live three years, one in the bark, one in the wood on their work of destruction, and the last in boring

a hole from four to six inches long, so that the injury is lasting. Many trees come from the nursery containing eggs or small caterpillars, especially the larger ones. For a remedy, the trees should be carefully examined before planted, scrape the loose bark carefully from the base, make a mound of wood ashes or other manure around the base and from six to eight inches high, a small circle only around the body ; remove the mound in July, spreading it over the ground, and be sure no eggs have been left. Make another mound in September, and allow it to remain till it thaws in spring. If the borers are in the wood dig them out, being sure to kill every one. A wire with a barbed end run into the holes will usually do the work, but sometimes it is necessary to use a brace and bit, chisel and mallet, covering the wound, if it is much of a one, with grafting wax. The tent caterpillar next received attention, its destruction by attacking the eggs or by crushing the pests when in the tents being urged. Another enemy considered was the lappet caterpillar, which is found on the leaves eating in the night ; hand killing is best for them. For canker worms tar and lard mixed and spread on a paper band he considered a good remedy, and bark lice can be taken care of by washing the limbs occasionally with a strong solution of potash. Plant lice should be treated to a solution of strong carbonate of ammonia, using half an ounce to a quart of water, and applying with a syringe, force pump, wisp of straw, or corn broom. For the coddling moth the plan of A. Greenman of Lockport, N. Y., was recommended. The pear is subject to the same insects as the apple, and has also plant lice which can be destroyed by the ammonia solution, a dressing of wood ashes, or air slaked lime. Blight, the speaker believed, to be caused by an insect that bores into the heart of the limb at the base of a bud and eats off the inner grains, causing the leaves and limb to die ; cutting the limb below the seat of the disease and burning is the sure remedy. He advocated treating the *exitiosa*, an additional enemy of the peach, by the use of the scraper and knife, or fire, if their progenitors can be caught. He spoke of the quince as not having as many enemies as the apple, but subject to the attacks of the borer and leaf slug. The greatest enemy of the grape he considered to be the thrip, with no remedy that he knew of; but for the plant louse which works at the roots he would use slaked lime and salt. Strawberries he spoke of as having no enemies, save the corn grub and black flea, which breeds on old beds from decaying leaves. Their habits he wanted to study further. For the currant worm and leaf hopper slaked lime when the dew is on he found effective. He also recommended giving the insects which affect flowers their full share of attention.

Prof. Stockbridge, of Amherst was called upon, and referred to the importance of dealing with man as the first enemy of the plants, as he shortens their lives by forcing and producing early maturity, which causes early decay. The only way to success in any department, he con-

sidered, was close and persistent work. He had heard it stated that the losses in this country from the work of insects is over $300,000,000 annually, and considered the subject as one justly deserving the most careful attention and most thorough experiments.

Leander Wetherell, Esq , also spoke of the importance of the subject, and of the insect as the greatest pest of the farm and garden, saying the man who learns to protect the crops from it has accomplished a very important work in the field of industry. He spoke of the canker worm as the greatest enemy of fruit growers, and wondered that no device has ever been perfected which will effectually keep him from the trees. Mr. Pierce, of Arlington, one of the greatest fruit growers in the state, had succeeded by diligence, tar and printer's ink, and the latter was most strongly recommended. A portion of Mr. Pierce's success was due to his pruning, his apple trees being cut the first or second week in June. He believed in taking off the wood when convenient, but in leaving a stub of six or eight inches, which is again cut in June and carefully covered with grafting wax, always healing and increasing health and fruitfulness He also used a mulch under the trees to catch the early apples, which would then bring a good price in the market. Caterpillars, he said, should be treated by cutting down the hedges of wild cherry trees, the harbors of these pests, and attacking the pests when they are in the tents and crushing them. His remarks referred to the apple, which he considered the most profitable crop for farmers to grow, and he spoke highly of the value of odd year Baldwin. He spoke a good word for the birds as among the best of the insect destroyers, and would sooner divide the cherries with them than the trees with the insects. Skunks were also spoken of as a great destroyer of garden insects, and crows were considered as the farmer's coworkers and as standing at the head of the insect destroyers ; although they pull corn he believed it better to protect the corn for a time and preserve the crows. He also recommended highly the culture of flowers as yielding a most important influence everywhere.

The discussion turned to the work of insects on shade trees, Mr. Wetherell considering the rock maple as freest and Mr. Hadwen speaking of the beech and ash as affected only by caterpillars.

Mr. Hadwen spoke of insects as demanding the attention of man, and not being left to nature. The ravages of the canker worm were referred to, and the importance of diligence in fighting him strongly urged, printer's ink being recommended as one of the most effective agents for its destruction. The importance of getting ahead of the worm was strongly presented. The codding moth he believed could be conquered by industry and study, and thought favorably of a solution of soap, tar and water, which is also effective in the treatment of the curculio. The coddling moth miller he had caught by putting a light in a barrel and covering the inside with a sticky substance, but had not tried the experi-

ment long enough to pronounce fully upon its value. Speaking of the currant worm he would deal with him with white hellebore, but the worm which bores into the wood and down through the pith he thought could be dealt with only by cutting off the affected part and burning. The enemy of the quince, which has been called the terminal blight, could be treated, he thought, only by cutting back and burning the wood. In speaking of the cultivation of roses, the thrips which are found on the under side of the leaf should be destroyed by a solution of hellebore and water, two spoonfuls of the former to a pail of the latter, applied with a syringe. They appear in the spring and fall. The rose slug can be disposed of in the same way. Birds he was fond of, but didn't like too many. He knew robins would destroy fruit and leave the insects unmolested, especially the caterpillar. In cultivating cherries he set fifty trees, early and late varieties, and didn't succeed in marketing one, as the birds got them all. He believed birds could be destroyed legitimately by the destruction of the eggs, and that a man had as good a right to take birds' eggs as hens' eggs. He again urged the importance of non-dependence upon birds for the destruction of insects, and believed the snowball insect could be destroyed by a solution of tobacco applied before the leaf curls.

Mr. William H. Earle spoke a good word for the birds as a friend of the horticulturists, and had never been seriously damaged by them, while he had been much benefited. He advised the protection of the birds. The currant worm, curculio, codling moth, pear blight, white grub and black flea are the enemies they had to contend with. The codling moth he thought could be caught with a lantern placed on a block in a pan of water and left burning. He agreed with other speakers in their methods of destroying other insects, although the black flea is a subject for further investigation.

Mr. Hadwen gave his experience with birds, stating that they had proved destructive to his Blackberries and Delaware Grapes.

Mr. Earle again spoke in defense of the birds, and Mr. Kinney spoke of the ravages of the black wasps among his Grapes, and the protection he got from the robins.

Mr. E. W. Lincoln spoke of air slaked lime as effective in protecting the cherries from the green fly and the currant from the currant worm, advocating its use as a powder. He thought the farmer was cutting his own throat in destroying the crow, as he is the greatest enemy of the grub, which is most destructive to the grass fields and the corn. Dividing fruit with birds he considered an impossibility, as a robin will not touch an insect when he can get strawberries and cherries, as he has better taste. Speaking of the value of birds he said, although the birds are increasing the insects keep up with them, and he believed the introduction of the English sparrow would be repented in sack cloth and ashes.

Mr. Marble also spoke of the ravages of birds, and Mr. Harlow spoke of their value. Mr. Hadwen said he spoke of the birds as a horticulturist, and not as a farmer, and all he asked was the protection of those who gave their time and money to the growth of choice fruits. He did not wish to be understood as advocating an indiscriminate slaughter of the birds or allowing boys to prey upon them. Mr. Wetherell again spoke a good word for the birds, and Mr. Hadwen again spoke of his remarks as applying to robins, and did not wish it understood that he favored their killing, although he thought the horticulturist entitled to protection. The discussion was further continued by Messrs. Wetherell, Lincoln, Hadwen and Kinney, the latter considering that the ravages of the white grub were largely due to the destruction of the crows and robins. He also spoke of the common angle worm as an injury to small fruits, instancing a case where they had proved very destructive to Jucunda strawberries, and he had used hot slaked lime to destroy them.

Votes of thanks were tendered Prof. Stockbridge and Mr. Wetherell

The Twelve Best Annual and Perennial Flowering Plants.

A paper read before the Society, by Mrs. Thomas L. Nelson, March 7th, A. D. 1878.

I have no intention of taking up your time in reading an elaborate essay on the subject before us to-day. With the limited experience I have had I do not feel competent to read a paper before this Society, but I have been invited to do it, and, with the hope of inspiring courage in the hearts of our ladies, shall proceed to enumerate a few plants which I have cultivated more or less, and tell what I know (or think I know) about them. I am well aware of one fact, however,—no two persons in this hall would, if called upon, name the same flowers as *best.* Each person has his or her own idea, and this meeting is, if I understand it aright, for the purpose of, in a measure, comparing notes.

Foremost among hardy plants I place the Rose ; no garden is complete without it. The chief difficulty seems to be insects, and with care they may be kept in subjection.

The finest among June roses are Mad. Hardy, Mad. Plantier, the Damask, and the mosses. I also take in the old white rose, which to me is the sweetest rose grown, but either through neglect or because it is not as much of a favorite with others as with myself, we rarely find it in gardens at the present day. Then the hybrid perpetuals in every shade from white to darkest crimson, *they* surely must have a place. What if they do bloom sparingly after the first general bloom is past ? Are not a few scattering roses more precious because of their scarcity ? Of course all the climbing roses are desirable, and we have only to choose which we will have. And branching from my subject, the roses we call tender, the ever-blooming class, Tea, Bourbon, Noisette, and Bengal, are *almost* as hardy as the hybrid perpetuals. I wintered successfully more than a dozen last winter. I should as soon think of wintering tender roses in the ground, as hybrid perpetuals If either are not strong, healthy plants, the probability is they will die.

Next to the rose is the Lily. In almost every garden we find the white lily (Funkia Alba,) with beautiful light green leaves, thriving in almost any location, producing its pure and exquisitely fragrant blossoms day

after day for weeks, and it is well worth cultivation. Cerulea is quite similar, except the flowers are smaller, light blue, and the foliage a deep green. There is a variegated variety (Marginata) with mauve colored blossoms. All are perfectly hardy, and do not require the slightest protection. Candidum blooming in June, Longiflorum in July and the Japanese in August, are the most common with us; these are all hardy, with the exception of Auratum and Longiflorum, which should have a dressing of leaves or coarse manure. There is an almost endless variety of hardy lilies, which will thrive in the same soil with precisely the same treatment. I wish some one in this vicinity could produce the wonderful bloom of the Auratum lily, which was brought from somewhere on Cape Cod, and exhibited in Boston, at Horticultural Hall, in 1876. It stood higher than any man in the hall, and had, I can't remember just how many blossoms, but I think more than one hundred and twenty buds and blossoms. I asked the man who exhibited it how long a time he had grown it, and he said that was the third time it had blossomed.

The Pink stands high in my estimation. The hardy pinks (those that we call the old fashioned pinks) we all know are easily grown. The Dianthus is one of our most valuable annuals. The old Chinese have been carefully hybridized with Heddewegii and other fine varieties, thereby producing many new and splendid varieties. Seeds planted in the spring, in good soil, produce plants which bloom during the summer and autumn even after hard frosts, and if care is taken to give a slight protection, they make strong plants for the next year, and, indeed, for a number of years. Dianthus Barbatus (Sweet William) is growing in favor, and as it is perfectly hardy, blooms freely and in exceedingly rich and beautiful colors, give it a little space and you will not be sorry. Carnation pinks are almost hardy and need only a few leaves thrown over them to insure a profuse and beautiful bloom in summer.

The Petunia is almost invaluable in the garden. Blooming when quite small, and continuing to bloom late in the autumn, it is no wonder it is a general favorite. I am speaking more especially of the single varieties, striped, blotched, mottled, fringed, small and large, light and dark; often coming up year after year and blooming profusely in the blazing sun. One paper of seeds will produce hundreds of plants. The double varieties come more properly under the head of bedding plants, and are not altogether a success grown as annuals.

The Aquilegia is in high favor at the present time, and one reason is, it has, in a measure, been allowed to die out, but it has been found that no flower can take its place, and I find that this is a growing feeling among the people; old plants have been thrown away to make way for new ones, and finding them almost worthless they go back to the old tried friends of their early days. I say no flower can take its place, *for this reason*: all of the Aquilegias, as far as I know, are natives of cold cli-

mates, many from Siberia, and one of the newest, Cerulea, comes from the Rocky Mountains, and all of the rest are found in high latitudes. There are a great number of beautiful varieties, but I think the most beautiful of all are Cerulea, blue and white, and Chrysantha, the "golden spurred columbine." Coming, as they do, from cold regions we can at once see how very valuable they are, or may be, to New Englanders. Our wild varieties are easily transplanted and readily adapt themselves to their new location.

The Clematis needs not to have its praises sounded. It shows for itself in many gardens in this city. Blooming freely where many plants fail, and in so many different shades, from the large white varieties, and small jessamine like flower and foliage of flammula, exquisitely fragrant, through the different shades of mauve and purple, to Jackmani, who wears the purple of the king right royally. Of the Phlox family enough cannot be said. In the hardy varieties, instead of the three or four varieties of years ago, we have an almost endless number of varieties, and as they are constantly being added to, we have a great many to choose from. Some kinds bloomiug earlier than others, if we are careful in making our selection we can have a succession of bloom. The hardy procumbent phlox (moss pink) every one is familiar with, and it is useful for edging. Phlox Drummondi is valuable both for massing and cut flowers. It really requires very little care after the plants are fairly started, and it is to the annuals what the geranium and verbena are to the tender green house bedding plants. In fact it is a most formidable rival to the distinct and brilliant flowering plants. And here let me mention a class of annuals and perennials which I consider of great value : The Gypsophila muralis, a low growing, small pink annual, so light and delicate it seems almost as if to take it up would crush it, still it keeps some time in water, and I think it is very lovely. Paniculata, hardy white perennial, flowering in panicles on thread-like stems, very useful with other flowers, giving a lightness unsurpassed to a bouquet or dish of flowers. It is also useful for winter bouquets, drying like immortelles.

Sweet Peas should be in every garden. Plant them as you would garden peas, in wide, deep drills, and do not make the soil too rich, or you will have more vines than blossoms. Some of the perennial varieties are beautiful, but they lack the fragrance of the annual.

The Pansy is a general favorite, and many cultivators are very successful in raising plants from seed. Nothing is easier. Plant in boxes in the spring for fall bloom, and in the ground in August or September for spring bloom. Get the plants well started, if in the ground, and cover lightly. If in the house or frame, set them in the ground as soon as it is free from frosts.

The Tropæolum, or, as we call the species which is grown in the open ground, Nasturtion, is a rapid grower and free bloomer, blooming all the season through, and after hard frost still gives its bright blossoms. Canary-bird flower is another species, and its lovely bird-like blossoms, a bright yellow, I should be sorry to miss from my garden.

The Morning Glory is perhaps as well known as any climber. Convolus Major, its true name, is sometimes classed with Ipomœa, of which there are many beautiful varieties. The Cypress Vine belongs also to the Ipomœa family. Among the first flowers that I cultivated (and I commenced quite early,) was the Morning-Glory, and well I remember my circle of Morning Glories in the centre of my flower bed. If we have a tree or stump to cover we can readily cover it, with only the trouble of planting a few seeds. Often they come up themselves in the same place, after being once sown.

The Aster is very easily grown. I have never found a place in my garden where it would not grow. I think almost any kind of soil suits it, and it really requires little care after setting the plants. I wonder very much when I see people buying Aster plants, why they do not buy seed and raise plants for themselves. They pay willingly twenty-five cents per dozen for plants, when in a small box they can easily raise, with an outlay of ten cents for one paper of seed, at least four dozen of plants.

The Balsam is not so easy of cultivation as some of the annuals. That is, it requires more care than annuals that can be sown, and left by simply thinning, like Mignonnette, Sweet Alyssum and Candituft. The plants must be transplanted, or you are very sure to have single blossoms. I saw very fine plants last season in this city, both in the ground and in pots. Great care must be taken in selecting seed. I think I have had more poor Balsam seed than of any kind.

Snapdragon is very beautiful and is very easily grown. I grew some last year, and could see no difference between those plants grown in sun or in partial shade.

And now I have named a few of my favorites I take the liberty to speak on a subject, which is of great importance to people having but a small piece of land to cultivate, namely, what are called bedding plants. Of course they are green-house plants. As this essay is merely to provoke discussion, I expect to get more ideas than I can give. I sincerely hope you will set me right where I am wrong. There are a great many people in a city like this who are changing their location from time to time, and of what use to them is the plant that gives little bloom the year it is set out? Annuals, except a few that almost grow themselves, they think are difficult to start, and the main resource is bedding plants. The Geranium is perhaps the most popular, because it is very easily grown, both in the house and in the garden; and nothing can be more effective than

a well-grown Geranium, finely bloomed. The Pink is also a great favorite with this class. Feverfew is invaluable, and well repays the small cultivator. Verbenas are not to be surpassed for a small mound or bed. We make a great mistake, however, in waiting to set out our verbenas and pinks till it is warm enough for very tender green-house plants. The frost that will kill Salvia and Heliotrope these plants do not mind. Even if the leaves do turn a little from cold, after they are sét, it will not injure them. No garden, however small, can do without Heliotrope. It must, however, be in a warm, sunny place, or it will be all leaves. Salvia Splendens, our scarlet variety, which everybody grows, needs nothing more than a good, sunny place, and a good bunch of Mignonnette is desirable. Fuchsias, strictly speaking, are not bedding plants. They are too easily broken by the wind, but I have seen beautiful specimens in the ground. Care must be taken to have the place a little shaded from the noonday sun and in as sheltered place as possible. The better way, perhaps, where you cannot choose the location, is to keep them in good sized pots, and in heavy winds and storms take them indoors. The Coleus and Amaranthus are excellent bedders, and Centaurea contrasts finely with them. Some Begonias have proved good for bedding purposes, especially Weltoniensis and some of the tuberous rooted varieties. All or part of these combined with a few annuals that require no special care, except to sow and thin out, like Sweet Alyssum and Candytuft, will make home a much more attractive place with but little labor. Nor should the laboring man think it beneath him to work a little each day in cultivating such a plot of ground. It is a rest, coming from the dusty shop, to work awhile among the flowers.

And now a word on a subject near my heart. Do not forget to give the children a place to work. A very small place will do. Remember you are giving an education that will be life long, and when one of the children asks you a question about a plant or flower, answer it in as simple a manner as possible and let the child understand what you are telling it. Let us take as much pains to teach about the flowers as we do about cabbages and beets, their habits and the best soil and location to grow them in, and you will have more flowers in this hall in the summer time than we are wont to see here now. It is not enough for the farmer to say to his boys, "sow these seeds," but he tells them minutely where, and how, to do it. Now we all know boys in the city do not have as much to do out of school as boys in the country. Consequently, as there is nothing for them to do, they lounge on the streets, thrown in contact with idle and dissolute men, and learn in due time how to fill prisons and jails acceptably. I do not say all will do this, but enough to make it worth the while to do the best we can to keep them agreeably employed. Boys do not care to go into the woods (except for nuts) simply because

they have never been taught anything about the beauties of the flower kingdom. The love of flowers is imbued in some children, especially if their parents cultivate flowers as though they loved them. God intended flowers to be a blessing to us, and if children, boys and girls, were taught to love and care for them, who can tell what the result would be? If the seed is planted and fostered, sure is the harvest.

Capt. John B. Moore, of Concord, was called out by Vice-President Hadwen, and, after complimenting the essayist, he gave some hints in regard to growing Roses. He said it is unnecessary to use very high culture; soil two spades deep, well manured and worked over, will grow them satisfactorily. He never loses hybrid perpetuals, but earths up the plants, and if the top dies he don't care, for he would cut to eight inches if they didn't die; with him they are really "perpetual," for he cuts them daily through the season. He said the rose wants a rich soil, deeply tilled; give them all they want; he would use liquid manure just at blooming time if there is a deficiency; he fills a leach-barrel with manure, puts sulphate of ammonia on top, and pours water through it; he sometimes uses sulphate of potash with the manure; he syringes the roses with salt petre water, to improve the foliage. In forcing perpetual roses, he plunges the pots in coal ashes in May, and freely waters, besides drenching the foliage; all buds are removed, and thus they ripen their wood early and get rested, ready for winter blooming. Then they are trimmed and carried into the potting room, and encouraged to start root-growth before the tops start. Then they are put in a cool greenhouse to bloom, draughts being avoided to prevent mildew.

Perrennial Phloxes, he said were condemned, but within a few years there have been many additions to the list which cannot be spared; they are very desirable, especially some of the dwarf kinds. The improvement in phloxes is greater than in any other flowers in the last five or ten years. They should be well thinned every season; two or three stalks together are enough. They require rich food; a well ripened compost is best, but special manures are desirable, either potash or phosphoric acid.

He said the perennial Larkspurs, with their variety of colors, are desirable; they too cannot be dispensed with. Hollyhocks, too, had a good word: he said some of the new ones are as handsome as roses. The Columbines he prized as highly as did the essayist. Lilies he said are easily cultivated, but must be separated every two or three years. Balsams are desirable, but the trouble is to get good seed; he did not think treatment would change double to single. He starts them in a cold frame and transplants them once there, and then sets them out eighteen inches apart, where they cover the ground. He praised Mignonnette, and Portulacca, and defended the Zinnia Elegans; in a lawn or border, it is

quite handsome, but is not desirable for parlor bouquets. He would keep them in a cold frame until they show single or double ; throw the single ones away and bed out the double ones. Pansies cannot be dispensed with, but in hot weather good blooms can only be got in shaded places. He said he had only just found out how to grow Sweet Peas. An excess of water is what they generally need. Plenty of water does wonders for flowers in a garden.

In answer to a question he said he smoked green houses twice a week, lightly, whether there were green-flies there or not ; this was a preventive. Heavy smoking he thought injurious to plants. Two light smokes on succeeding days are better than one heavy one.

Mr. Hadwen followed, saying that Capt. Moore is a farmer as well as a horticulturist ; his roses here today are the best ever shown in the hall, and his example, as to what a farmer can do, is valuable to Worcester farmers.

He gave a good word to perennial Phlox as a plant of easy growth, and growing in popularity. Many of the new specimens are well worthy the attention and pride of the best horticulturists. He also praised the Pansy, and said it can be especially well grown in this vicinity.

Of flowering shrubs he mentioned the *spirea thunbergii* and the *deutzia gracilis* as particularly good ; also, *deutzia crenata* and *crenata flore alba pleno*. He commended the Weigela, and said that Japan is sending us many desirable acquisitions.

Mr. F. J. Kinney said two flowers had been neglected today : the *lobelia cardinalis* attracts more attention than any other in the United States ; it can be easily grown in a common garden and will last for years. The other is the Forsythia which he praised almost as highly as the *lobelia cardinalis* as it blooms early, with the Japan Quince, and is a mass of bloom.

Secretary Lincoln doubted the hardiness of Forsythia *viridissima* which, in his experience, winter-killed badly.

A large portion of the audience having come in since the opening paper was read, Mrs. Nelson was requested to repeat it, to which she cheerfully consented. Hon. Stephen Salisbury moved that the thanks of the Society be extended for the essay, and that a copy be requested for publication. The motion was adopted unanimously.

ANNUAL REPORT OF THE SECRETARY.

To the Members of the Worcester County Horticultural Society:

The year that has just closed was, to the local Fruit-grower, one of chequered fortune. While seed time and harvest did not fail, doubt arose at times which would not be dispelled, whether the just and unjust were actually served with rigid impartiality. Of what avail to "pool our issues!" when no angel descends to trouble the pool!

To him who toils beneath a burning sun, when clouds and rain are required; who beholds the fruit of his labors taken from him by the plague of insects, or the greater plague of birds; and to whom blight and frost are certain, as merciless visitants: moments of discouragement are inevitable. Nevertheless the reward is sure, if slow, to the true Terræ-culturist;—the man or woman who tills the soil for the very occupation and its ample returns. They may not make two blades of grass grow where was but one before: yet robust health, a contented spirit, and the pride of personal independence, constitute of themselves solely a sufficient remuneration. They may not share in the occasional gains of trade; but they are exempt from its frequent losses, its inexplicable vicissitudes and its harassing anxieties. The old fable of Antæus, whose strength was renewed by contact with his Mother-Earth —is easily comprehended in the light of these latter days.

As a Society,—we have every reason to take renewed courage. The labor of Exhibitions is monotonous, it must be confessed: yet is not the tree known by its fruit? What then if the lesson is not lost? In our own case, *e. g.*, we find what we cast upon the waters returning after many weary days. The seed sown at our first weekly meetings fell upon receptive soil. Varieties of Fruit, then recommended by our aged and most experienced Members, but which had almost disappeared from cultivation, are re-appearing, in force and perfection, at our Exhibitions. A better taste resumes sway,—and garden and lawn are again brilliant with those old-time shrubs and plants that should never have been displaced. If our task now and then grows tiresome, bear in mind its privileges, and press forward! For it *is* a privilege, to any

but the merest dullard, to be invested with the apostleship of taste and beauty; to teach how the earth may be made to renew its youth;—how the waste places shall be trained to assume and develop new forms of loveliness.

The practice of holding meetings, at which essays should be read, to be followed and improved by discussion of their several themes; a practice happily inaugurated in A. D. 1877; was continued during the earlier months of the current year. The subjects selected for consideration were as follows:—

January	10.	Manures.
"	17.	Tillage.
"	24.	Garden Vegetables.
"	31.	Hardy Ornamental Trees, Shrubs and Plants.
February	7.	Orchard Fruits, their Cultivation, Storing, and Keeping.
"	14.	Insect and other Enemies of Fruits and Flowers.
"	21.	Diseases of Fruit-bearing Trees and Vines.
"	28.	Small Fruits—Modes of Cultivation.
March	7.	The best dozen Annual and Perennial Flowering Plants.
"	14.	How can we Utilize the Waste or Unimproved Land of New England?

Members of our own Society, of coquate tastes and pursuits, gladly yielded the ripe results of their observation and reflection. For that object teaching has apt, if enforced, scholars, among our active associates, has been apparent for a long time to your Secretary. The Frugivorous and Granivorous bird, and insect, at last exact that attention so long demanded for them in these Reports; and even Olean Street and Sunnyside concede that, as concerns the *Turdus migratorius*, there is slight odds between grist and toll. Florists and Pomologists, from distant parts of the Commonwealth, paid ready heed to our request, and not only instructed us, orally, but delighted our eyes with a modern and Yankee Feast of Roses. The audiences, it is a pleasure to state, were appreciative and large: in some instances, so large as to test the capacity of the Hall of Flora. This was notably the case whenever matters of Floriculture were to be treated. For the ability to master, and expound, that branch of Horticultural learning, was amply vindicated by one to whom our Society has been indebted for continuous encouragement; while the rapt attention of the throng in attendance plainly manifested the powerful attraction of the subject for her sex.

Nevertheless it is obvious, if these meetings are to be kept up in future, and to be fraught with that positive instruction without which

they are but a mere waste of time, that there must be a decided change in their character. There can be no such thing as *fiat* Terræ-culture. It required the sweat of the brow, and plenty of it, at that, to grow Strawberries upon Sunnyside, throughout the heat of last June. Not even "Sovereigns of Industry" can proclaim—Let there be berries! with absolute assurance of a crop. An order to cease their ravages will scarcely be heeded by the insects on Olean Street, upon whose myriads incessant war has made but slight impression. The future apostle must sit at the feet of Gamaliel, that he may be qualified to teach. A Society like this should be able to place in requisition the most ample learning: should not be satisfied with inferior service. Its Members will do all that is within their power: but they can admit, without affectation of humility, that there are acclivities and summits of knowledge which they have had neither leisure nor opportunity to surmount. Why then, longer, impose a tax upon good nature, which has already sufficiently responded; or, without necessity, subject ourselves to wearisomeness under vain repetitions. If we will thresh the same old bundle of straw, we must content ourselves with chaff. Yet why not meet the conceded demand with a suitable supply? Are we so anxious to talk, ourselves,—that we cannot, or will not listen? Amherst rejoices in Goessman and Stockbridge: Cambridge felicitates herself upon the world-wide renown of Goodale, Sargent, and Gray. Would not a course of lectures from any one of those eminent savans,—*Scientiæ doctores*,—be of vastly more worth, than the spasmodic utterances that must otherwise constitute our sole poor reliance for the future? A partial test of the attractiveness of Botanical instruction has been had during the past summer, in this city. Might not the measure of success be greater, were the experiment tried upon a more generous scale, and with larger appliances? It is doubtless a good thing to exhibit flowers. Would it not be better to show the inexperienced in what simplest manner they may be grown? This Society was incorporated by the General Court, some thirty-six years since, for the purpose, as explicitly stated in the Charter, of "advancing "the science and encouraging and improving the practice of Horticul-"ture." Somewhat of its actual achievements may be estimated, by those who behold the abundance with which fruit and vegetables are supplied to our markets; or that rarer charm and fragrance, wherewith garden and lawn are made to attract and delight the senses. And yet, within how limited a sphere is its usefulness confined? To how few

of our young men and women are Floriculture, or Pomology, aught but a sealed book. But why expect better things from them, so long as our own Society is needless or negligent of its Trust: supinely content with the bestowal of petty awards upon this plate of apples, or that stand of flowers!

The *Vernal Exhibition*, holden, according to assignment, upon the 21st of March last, was quite successful. A cold wave prevailed; the mercury, at 7 A. M., indicating 21° Fahrenheit. The attendance was unusually large; and, what was more unusual, continuous throughout the afternoon. The *Hyacinths* were the first that have been shown upon our tables, and were in good form for so late in the season. When Exhibitions are held, without intermission, it may be possible to have a creditable display of these bulbs. As it is, private cultivation seems to have got ahead of the action of the Society.

The *Azalea Indica* was exhibited in unwonted number. But some of the best bloomers were drawn, from unilateral exposure to the sun; an influence that is too often overlooked in the development of all plants: and others were distorted, in shape, to meet the unnatural requirements of their growers. That, however, is a fault of method which can be corrected by a severer taste. That the *Azalea*, itself, is getting into more general cultivation, is a matter for congratulation. It is easily and simply grown, has few wants, and does not exact the incessant care that is so often gladly bestowed upon plants that are apparently coddled the more, the less they have to recommend them.

The *Annual Exhibition* of Roses and Strawberries was held upon the 20th of June, as it was found necessary to anticipate the date appointed in the Schedule. The intense heat had developed both flowers and fruit so rapidly that the risk of delay was too great to be taken. The result of the whole season has shown that the decision was wise; although, at the time, it appeared to threaten practical injustice to some of our prominent exhibitors. Some of the newer varieties of Strawberries were shown, for the first time; a pleasing indication that our members are not unwilling to prove all things, while holding fast to that which is good. Prominent among those novelties was the Crescent Seedling, of whose fecundity nothing had been lost in the published advertisements. Said one of these modest lures for the innocent:—

"I measured in my field thirteen rods of ground, which was set in the spring of 1876 with 200 plants in rows four feet apart, which produced, in the year 1877, 1,175 quarts of berries, bringing at wholesale eighteen

cents per quart throughout the season, making at the rate of 14,461 quarts per acre. This is in common field culture. Habit of plant is very strong; never has blighted or rusted, and needs no cultivation; will overrun all foul material; even witch-grass and sorrel gives way to it."

After that,—may we not sing with the humorist,—

"Draw me a pot of beer, mother!
And—mother! draw it *mild*."

The advertisement says that the habit of the plant is very strong. Which is precisely what your Committee on Small Fruits thought of the scent of the berries. If, however, this new variety will overrun all foul material, even witch-grass and sorrel, your Secretary is assured, upon good authority, that the COMMISSION OF PUBLIC GROUNDS, of the City of Worcester, will take all the plants of it that can be obtained. A contest for the supremacy in *Elm Park*, between this pugnacious Strawberry and the *Azalia hispida*, would be a botanical tournament worth travelling some distance to see.

The season, as a whole, was favorable to the Strawberry crop, when well cared for; and not subject to local or particular disadvantages. Rain fell copiously and at just the right times, while the berries were swelling; although a period of intense heat and comparative drought sensibly affected the later maturation. But it was amply proved, were demonstration needed, that the Strawberry crop need not fail, where skill and diligence are applied to its cultivation: and that a market can be found for fruit of the highest excellence, when cleanly gathered and tastefully packed. It may shed some light upon future discussions of the question of tariff or free trade, to observe that, on Sunnyside at least, they expect no other protection than the surpassing excellence of their product.

A better exhibition of *Currants* was never witnessed, in our Hall, than that held during the last Summer. Yet the yield of this wholesome and but half-appreciated fruit was materially lessened by the cold, keen winds, followed by a period of very low temperature which, supervening to a remarkably mild winter and spring, blasted flower and young germ with fatal impartiality. There would have been some compensation for other injury, had that cold wave tended to reduce the yield from the Apple Orchards, whose bloom was then excessive. No degree of frost appears to impair the vitality of the Currant-Worm (*Abraxis grossulariata*) or diminish his numbers: and there can be little doubt

that he must be counted among permanent foes wherewith we shall have to strive in future. Would that all the Insect-Foes of the Terræculturist were as easily met and vanqished!

At their last Annual Meeting, the TRUSTEES voted to hold an Autumnal Exhibition, as had been customary since the organization of the Society. Subsequently, in the early Spring of A. D. 1878, upon representations from a Committee of the *Worcester Agricultural Society*, that an Exhibition, to include the products of Horticulture, was contemplated by the *New England Agricultural Society*, within the City of Worcester, the TRUSTEES, reconsidered their action and relinquished the proposed Exhibition. They also, with entire unanimity, *voted:*—

"That the members of this Society be requested to help towards the success "of the proposed Exhibition of the New England Agricultural Society, in what-"ever way they can. And that the officers of the Society be authorized to "furnish such aid as is in their power, without subjecting the Worcester "County Horticultural Society to any pecuniary or other responsibility."

In obedience to this decision, the Tables and other furniture of our Society were transferred to Mechanics' Hall, at the proper time: the Secretary himself attending, to render service, and to put in use the various appliances that long years of experiment and test have shown to be essential to the successful conduct of a large Exhibition. Valuable aid was rendered, as required, upon the Committees, by veterans whose approved knowledge has so often guided our awards. In short, it may be asserted, with full confidence, that nothing was omitted that would, in any way whatever, help towards the success of the proposed Exhibition. And, in some respects, it was a success. It yielded a reasonable return in money, which was proclaimed to be the chief end in view. It attracted a large crowd of visitors: of whom many that came simply to be amused might have gone away instructed, if benefit is to be derived from object teaching. Moreover the various articles, in their respective classes, were subjected to the judgment of thoroughly competent Committees; so that not even Florists should have pretext or excuse for captiousness or cavil. Of the actual advantage of the Exhibition to the best interests of Horticulture, there may be some question. No one can determine how much of what success there was should be attributed to extrinsic causes. Their own likenesses, in the photographic collections, seemed to be a load-stone to numbers. The works of high and low "Art," in unequal measure, proved a fascina-

tion to more. But the display of Fruit and Vegetables was scarcely worthy of the occasion; and certainly could not be claimed as likely or fit to magnify the reputation of New England. Our own Society, within its limited province, in years not so long ago, has held Exhibitions of Flowers, Fruit, Plants, and Vegetables, that were superior in every department. Those local Exhibitions were held in September, also: and but two weeks later in date.

A close analysis discloses a lack of that general and wide-spread competition which a Society, embracing within its scope all the New England States, should be able to evoke. With an exception of a few large entries from Connecticut; and a stray lot or two from New Hampshire; what was there to distinguish it from a Massachusetts,—perhaps even a Worcester County Exhibition? Of the display of Vegetables—whence-soever they came, as it is not necessary, so it is not advisable to speak. Suffice it to say that a Hall was hired for them and that they did not crowd out their Committee.

It is the deliberate opinion of your Secretary that this Society should consider the matter well before deciding to participate, by active or passive co-operation, in another similar Exhibition held at nearly the same date. If the New England Agricultural Society should determine to repeat its visit to Worcester, as is more than probable; there can be no doubt that it will be neither courteous nor polite for us to propose an Exhibition in antagonism. Yet the best interests of Horticulture, in this region, are measurably committed to us; and we have no right to be recreant to the trust. Wherein, save in the domain of Flora, is not and would not a Horticultural Exhibition, during the first week of September, be premature? The late John Milton Earle told me that Apples and Pears developed more, in the last three or four weeks just prior to maturity, than during their entire previous existence. Whose personal observation does not confirm that experience of an honored and valuable life! Can,—nay ought we to encourage the display of fruits—as specimens, that are but half or two-thirds formed?

Might it not be well—should these views meet with your approval, —to suggest to the New England Agricultural Society the propriety of selecting the first week in October for the date of their return to Worcester. Animals exhibited might then be local prize-takers instead of maidens. A more propitious season could be expected;—one that would scarcely kill a bull in his tracks. And while no injury could

enure to any class, a positive benefit might be derived by those great Pomological interests, which would be better appreciated by our Farmers were it as difficult to grow Apples as to grade calves. To induce people to engage in the cultivation of Fruit, a display of specimens should be limited to such as are perfect—which it is desirable to produce and multiply. Knurly and worm eaten samples are but evidences of accident and mishap, to which all of us are liable, but from which diligence and precaution will yield a measurable exemption. Our ambition should be nerved to achieve the utmost possible; nor should content itself supinely to accept what has been of common attainment, time out of mind.

It may be objected that an Exhibition, in October, would be too late for Flowers: and usually, such would be the case. But Societies, like the New England Agricultural, are formed to foster the material interests of their especial locality: and of these no one can over estimate the importance of the crop of *Apples*—whether it concerns health or food. Flowers—however beautiful—are a luxury, and in no wise indispensable. They minister to no imperative necessity, although deprived of them, their absence would be sadly felt. We cannot eat them: we cannot even smell them—when they are scentless or—we have a cold in the head. But of the two institutions—the Apple or the New England Agricultural Society,—the Apple goes to the head. And therefore,—that its almost countless varieties may be displayed, in their complete excellence, the season of its average maturity should be kept first and ever in view; so that Massachusetts and New Hampshire need not hold back, while Connecticut presses continually forward. The same arguments hold good, in similar if not equal measure, when we consider the *Pear* or the more important species of *Vegetables*. A genuine Harvest-Home cannot be forced into September.

Nor need Flora be slighted or, what would be inexcusable in a Society like our own, wholly ignored. Your Secretary has repeatedly urged, in these Reports, a final abandonment of the *Annual Autumnal Exhibitions*. They do not repay their actual pecuniary cost, being rather a source of expense. They are scarcely valuable as a method of instruction; the attendance upon them being usually sparse and listless. They consume much precious time of a great many Members; provoke some jealousy and more discontent; and are productive of but little apparent benefit. Doubtless they have their uses; but what is contended for here is, that those uses by no means compensate for their

palpable deficiencies and drawbacks. Now, let us suppose that the energy and resources, in great measure wasted upon these unwieldy displays, were lavished in due proportion upon our Weekly Exhibitions! Imagine a collection of *Ferneries*, under our auspices, and in our Hall: a collection such as, under other and perhaps not more congenial management, heretofore proved an irresistible attraction. Encourage the growth of indoor Bulbs, and anticipate our tardy date for their display. Magnify the customary *Vernal Exhibition;* and excite a weekly interest by challenging and eliciting a weekly attraction! First,—spread your board! and then, send out into the highways and compel them to come in.

The expense to the Society of all its Weekly Exhibitions in A. D. 1878, was trifling in comparison with their obvious benefits. Their entire cost in premiums and gratuities was less than Two Hundred Dollars. And, of this sum, by far the most considerable amount was awarded at a single display,—that of *Roses* and *Strawberries*. By discontinuing the *Annual Autumal Exhibition* we should be enabled to make a saving, whereby it would become easy for us to bestow worthier prizes at our more frequent competitions. And if, in addition to the fixed premiums for specific articles and methods, the Committees should be authorized to dispose, at their discretion, of a reasonable sum each week, it is believed that a new and decided interest would be awakened. At present, but few can anticipate any remuneration for their loss of time. Two or three ladies, usually the same throughout the season, and of whom it may here be said that their assiduity and taste merit far higher recompense, monopolise ourpre miums for flowers, —arranged. There may be other contributors deserving recognition: but the schedule was established, months previous, and permits neither excess nor evasion. We ought not to intermit our practice of reserving a portion of our annual income for the reduction of our Debt. But, with the discontinuance of our *Autumnal Exhibition*, it would seem practicable to appropriate Five Hundred Dollars for the purpose now suggested. Perhaps it may not be possible, in our more contracted sphere, with so few gentlemen and ladies of means and leisure taking that interest in Horticulture which might well beseem them, to maintain, like the Massachusetts Society, an uninterrupted series of meetings throughout the year. If however, it should be deemed worth attempting, the knowledge that our Committees had been authorized to confer gratuities upon meritorious objects might well promote

the success of the experiment. Nor would this allowance of a somewhat wide discretion, preclude the continuance of an arbitrary schedule for specified articles, as now. But it is gratifying, if one can exhibit perfect specimens of an old favorite, like the *River* apple for instance, for four weeks in succession, to receive something more substantial than an "honorable mention" in a newspaper report. In what equal, if not greater degree, is not this to be assumed, when a lady takes pains to place upon our tables some pet plant, whose cumbrousness might well discourage, even if its health and beauty suggest the display! Such things are precisely what we want and invite: should we not make some practical acknowledgement of their appearance?

Our *Weekly Exhibitions* have been the life of the Society. But the faintest breath quivered in its nostrils when they were instituted. They awakened interest, commanded attention, and invited membership. Attracting the first flowers of Spring, they could be made, by proper direction, to fill each successive week throughout the year, with ample suggestiveness to the eye or palate, until their close with the last fruits of winter. Every Exhibition would then have a freshness that can be attained in no other way. And novelty has a charm in itself. Your earnest attention is solicited for the policy, simply outlined as it is, of relinquishing the oppressive and unwieldy *Annual Autumnal Exhibitions* and applying the energy and means absolutely wasted upon them to magnify the Weekly displays. The importance of these, conducted as now, when commenced each year, is found to increase by their own momentum. They grow large enough for convenient control, by August; yet not too large to be comprehended in detail. What they might become, if kept up through the whole year, can only be told after actual experiment. And that experiment, be it explicitly understood, managed liberally and not under the pinch of the gripes.

Since mine Uncle Toby shared his world with the fly, a multitude without number have imitated him, perforce, without pretending to the Christian grace that inspired his example. The plague of devastating insects grows worse with each recurring year. Who can tell when the *Tent Caterpillar* abode not with us? The very oldest of our Members can just recall the time when the ravages of the *Canker Worm* and *Curculio* became sadly evident. The *Currant Worm* (*Abraxis grossulariata*) is already a veteran. The *Colorado Potato Beetle* (*Doryphora decemlineata*) has settled down by the shore of the

Atlantic and in the terse phrase of Senator Hill, he has come to stay. And now there appears in our corn-fields the Indian *Cetonia* (*Cetonia Inda*) "long known as very injurious, at times to corn; and as fre- "quently extending its ravages to fruit,—particularly to pears and "peaches," into which it burrows, to their effectual destruction. This insect is described by Professor Lintner as "a beetle about six-tenths "of an inch in length, with a hard body very obtuse behind, and a "triangular thorax dark brown; head and thorax dark brown, covered "with greenish yellow hairs; wing covers light yellowish brown, with "changeable metallic tints, sprinkled with numerous irregular black "dots; underside black, hairy, andthe legs dull red. Whenever abun- "dant in its fall brood (there is also an early spring brood), it proves an "exceedingly pernicious insect, and unfortunately we know of no way "of checking its ravages but by means of hand picking and destruction "of the insects collected."

Years since, when the smoke of your sacrifice ascended continually, and your prayer at the State House was incessant that a great plague might at least be alleviated, you were told by the *Committee on Agriculture* that all effort was futile. Its *Chairman* assured you that he and his colleagues agreed with your views, but that the General Court would never accept a report in your favor. Rather would it "laugh at your calamity, and mock when your fear cometh." It is to be hoped, in this present hour of trial, that "*Moore's Concord*" may be found proof against the depredations of the *Cetonia*; or, should that trust fail, that the *Turdus migratorius* may be equal to his emergency.

But, among all the Insects injurious to man, that which is commonly known as the *May Beetle*, or *Cockchafer*, (and by its scientific name, as *Melolontha Vulgaris*, or *Lachnosterna fusca*), maintains an easy pre-eminence. Suffering from their ravages as we, in this country, do, we but imperfectly realize what a pest they can become. In Europe, when present in large numbers, they have done "almost incredible mis- "chief to such Trees as the Beech, Elm, Sycamore, Willow, Oak, "Cherry, Apple and Pear; as also to Nut trees and Vines. The grubs "will eat the roots of nearly all trees and plants, particularly those of "Cherry, Plum, Pear and Apricot trees; and Rhododendrons, Azaleas, "Roses, Strawberries, Lettuce. Some who have suffered much from "their Strawberry plants being killed, have found flowers of Sulphur, "strewed on the ground and then dug in, a very effectual method of "keeping them away. One-tenth ($\frac{1}{10}$) of Gas-Liquor to nine-tenths

"($\frac{9}{10}$) Water, or strong salt and water, is very useful for water g Grass "in the Autumn when attacked by these grubs."* The late description of this insect, and of its habits, that has fallen under the observation of your Secretary, is so much plainer and more concise than any in the accepted works upon Entomology that it is here quoted verbatim :—

"The females lay their eggs in April and May, at the bottom of a "hole some 4 in. or 5 in. deep, which they make in the ground. The "eggs are about the size of a Hemp seed, and of a yellowish color. "They seem to vary much in number, but probably less than fifty will "seldom be found. The grubs are known by the name of White-"Worms in England, and of Connaught Worms in Ireland. They are "hatched in June or July ; they have fourteen joints including the "head ; their bodies are much wrinkled and of a dirty white color, with "a bluish tinge in the terminal segments. They have three pairs of "legs, one on each of the first three joints. The head and legs are of "a yellowish red. The insect in this state has no eyes. During the "first summer and autumn the newly hatched grubs keep together, "and the damage they then do is inconsiderable. Before the frosts and "rains of Winter set in they burrow deeper in the ground and, having "changed their skins, remain in a torpid state during the Winter. "They come nearer the surface in the Spring, and then feed singly on "the roots of nearly all herbaceous plants. When one year old they "are about $\frac{1}{2}$ in. long. At the approach of Winter they again descend "deeper into the earth, change their skins, and remain torpid ; and on "the approach of Spring commence their depredations with renewed "vigor, attacking the roots of Fruit and Forest trees, as well as those "of Herbaceous Plants. During the Summer they attain the length "of 1 (one) inch. At the end of Autumn they again bury themselves "out of harm's way from frost and rain, as in previous winters, chang-"ing their skins and remaining torpid until the return of Spring, when "they are nearly full-grown, and about $1\frac{1}{2}$ in. long and nearly $\frac{1}{2}$ in. in "diameter. In July they descend to a depth of 5 ft. or 6 ft., and hav-"ing made oval cells in the earth, by the movements of the bodies, "lined with a glutinous secretion from their mouths, they assume the "chrysalis state. Whilst in this condition the antennæ, legs, and "wing-cases of the insect are easily seen through the thin, pale reddish

* Of this recommendation it may be remarked that it would be almost impossible to saturate the ground when parched, as now, by one of our American droughts. E. W. L.

"skin of the chrysalis. They remain in this state until the next Jan-
"uary or February, when they emerge as whitish, soft beetles, but in
"a few days become hard and of their mature color. They still, how-
"ever, remain underground until the middle of April or May, when
"they dig their way to the surface with the aid of their strong fore-legs.
"The perfect insects do not live more than ten or twelve days; their
"flight is usually slow and awkward, and they seem to be unable to
"prevent themselves flying against anything in their way. They sel-
"dom fly about till evening, resting on the branches and under the
"leaves of trees during the daytime."

A pleasant companion, truly, for all of us who have ought to do with the cultivation of the earth. Now pursuing his invisible work of destruction beneath the surface of the smoothly-shaven lawn; and again burying himself so deep as to be beyond the reach of a subsoil plough. Yet need we not mourn as those without hope. The peril is imminent: far worse than is realized by the careless or unthinking multitude. Many a waste spot in those neatly kept plats of grass, rendered possible in this country by the recent invention of the Lawn Mower; many a drooping half-dead shrub in garden or park, owe their barrenness or loss of vitality to the unsuspected ravage of this Insect. The marks of their presence are sadly evident around Webster Square, in this City; and Elm Park offers palpable traces of their visitation. They are omnipresent:—are they immortal? Mention has been made, already, of the useful application of water in a given proportion of the Ammoniacal liquor that is a cheap residuum from the manufacture of Gas. But it has been reserved for American Science to discover a simple and effective method of arresting the career of the voracious *Melolontha*. And, as it is a method requiring no technical skill for its employment, I recite it here for your instruction and benefit,—premising, as an act of justice to the *American Agriculturist*, that it was originally recommended by one of its correspondents. At first, then, you are to hang up in a tree, one or more wide-mouthed bottles. Quite a number of the beetles will be captured in a single night. From those captives, to use the precise language of the writer, you will proceed to "excision "of the prothorax and removal of the elytra." I am not prepared to affirm that the next and final step in the operation will not demand a careful manipulation whereof you may not all be capable. Yet my faith in the ability of the Members of this Society is extreme. Nor will I trifle with your curiosity which is now so highly aroused. You are

then to take up the beetle, thus deprived of its *prothorax* and *elytra* and place it tenderly in the open bill of a sprightly specimen of the TURDUS *migratorius !*

Should any one object to the delay and trouble of the preliminary dissection, let him profit from the experience of the discoverer : "When "I put a live beetle down his throat" (the throat of the *Turdus*) "he "would swallow it, but would exhibit such evident signs of distress that "I decided that this process was cruel and unnecessary."

The matter is so serious, that a further quotation may be excused :— "After I had given him three or four he would mount his perch and "wait until I could prepare another, all the while watching the opera- "tion with evident interest. He would throw back his head and open "his mandibles to their fullest extent to receive the proffered beetle "from my fingers. His appetite knew no bounds. I was astonished "at his voracity. Every day he consumed from forty to fifty June "bugs. One morning at 7 o'clock I gave him fifteen; I returned from "the office at 12 o'clock, and from that time until sunset that evening "I fed him all he could eat. During this time he disposed of seventy- "two of the large beetles ! I have no doubt if I had fed him during "the morning he would have eaten a hundred !" What a precious experience have we, in this guileless narrative ! How fraught with instruction to our friends and associates upon Sunnyside and by the Holden Line; along May Street and at the Elmwood Nurseries ! Let them catch and domesticate their successive broods of *Turdi !* Arise with the lark and, collecting their wide-mouthed bottles, remove enough *Elytra* and *Prothoraces* to permit of an ample breakfast. During the forenoon they can pick their usual supply of luscious berries, being sure to market them before dinner. The whole afternoon will then be at their disposal, which time they will be only too happy to spend in the elimination of more, and yet more *Prothorax.* Blissful millennium ! Charming Arcadia ! Though I may never behold another Centennial, nor indulge an errant fancy in that dream of Fair Women which bewitched England's Laureate; yet, let my eyes but feast upon this vision of Perfect Horticulture, realized, and life will not have been in vain. In comparison, how insipid appear the Apician banquets of the Grange ! or even those seductive Huskings whereto the "Work" of the Sovereigns is so often but an insidious lure !

Of other Insect-Foes what shall be said ! What language shall do justice to the *Caterpillar* of Protean form and countless myriads ; with-

out *Elytra* to be removed, but for which the *Turdus* alas! betrays no hankering. How describe the multitudinous swarms of *Rose-Chafers* that infested our Vineyards and which Mr. Kinney could only measure, but no man could number! Bureaus of statistics are established to investigate the causes that injuriously affect the laborer. But the General Court has no ear for the husbandman, who complains that the very elements of subsistence are threatened, and that the question of producing food at all should have precedence of the minor inquiry:— How much shall be paid for its production?

The Harvest year which is just expiring has not been without one striking compensation for the Pomologist. He has enjoyed an almost complete exemption from that mysterious *Blight*, whose ravages have been so wide-spread and unsparing for many years past. To what natural cause shall we attribute this happy immunity? There has been the usual discharge of electricity; there have been heavy showers, and about the ordinary alternations of cloud and sunshine; although the period of what are termed Dog-Days was less oppressive and sultry than is customary. Yet, for the first year since he has been Secretary of this Society the writer has not lost even a twig. What stern experience he has had, you need not now to be informed. He learns, from a very general interrogation, that others, fellow-sufferers heretofore, were equally fortunate. Still no ray of light penetrates our ignorance. If of fungoid origin—as would appear to be the better opinion,—what produces it, or excites its virulence? The law provides for Inquests in the event of crime or death, whereby the dignity and peace of the Commonwealth are assailed. A deadly peril to one of its material interests attracts no attention;—cannot even aspire to a place among the Orders of the Day. The Grange agitates for more careful consideration of the interests of Husbandry. But its Representatives, after they have climbed Beacon Hill and got wonted to its Castle of Indolence, devote their time and study to the *menu* at Parker's. The writer can recollect no Report from the Committee on Agriculture, for the last Decade, suggesting aught but "leave to withdraw." No proposition emanating from an individual Member of the Legislature, bucolic or otherwise, has looked to the protection of the community, engaged in and dependent upon the cultivation of the soil, from damage by ravening birds, insects, or blighting disease. We tax ourselves to maintain a Police and Militia, to guard against a possible breach of the peace. Probably Massachusetts cannot afford the cost of an Entomol-

gist; electing in preference a system of largess to her unsalaried Commissions. It cannot be that a competent man is wanting;—since the Federal Government found one, at the instant, to investigate and report upon the Entomology of the Western Plains. Verily, "a prophet "is not without honor, save in his own country:" else, numbering Morse and Packard among her sons, our conceited and often pragmatic Commonwealth could easily find a suitable place wherein to put the right man.

"There is no royal road to learning," and there would appear to be no immunity from the primeval curse. Even the Horticulturists of California are beginning to realize that the earth will not forever yield spontaneously; and that the foes to be encountered in its cultivation, will not always confine themselves to the shores of the Atlantic. Says a writer, by the far Pacific:—"It cannot be denied that this is an off "year in fruit in California. We have been so long and so constantly "in the enjoyment of good, almost perfect fruit in this state, that we "are loth to admit that there can possibly be a change—even a tem- "porary one. Our apples have been growing wormy for a number of "years, and so have our pears; but this year the pest has gained "a stronger hold on those fruits than ever before. It has come upon "us out of all proportion; and, instead of taking a few of our apples "and pears, the worms have taken the many this year and left the few "to come to perfection. We trust and hope that it may be owing to "the season, and that such wide-spread destruction will prove only "temporary." The apostle tells us that "faith is the substance of "things hoped for, the evidence of things not seen." Call it faith or *fiat*, whichsoever you prefer, but, all the same, in California or Massachusetts, man finds himself powerless to contend, unaided, with the myriads of his Insect-Foes.

Does anything remain unsaid of the losses to the Pomologist from the depredations of Birds? Who among you is not personally cognizant of them? Whether it be the early Peas of Paul Whitin; the Strawberries and Grapes of Henry Phelps and Frank Kinney; or the Raspberries and Pears of your Secretary and others, the beak of the Turdus *migratorius* is ever open, omnipresent,—omnivorous. Nor is this a local, individual prejudice. Professor Beal, of the Michigan Agricultural College, states that "One Sunday, at Adrian, Michigan, "in about eight hours, the robins took five hundred pounds of grapes." He says that "H. D. Adams, of Kalamazoo County, raises about one

"hundred and fifty bushels of Cherries, annually. One year the "birds came in such flocks that between fifty and a hundred bushels of "cherries were taken almost at once." He says "the idea of raising "enough for the birds is 'played out.' The most destructive of these "birds are the robin, (pseudonym for the TURDUS,) cat-bird, oriole, "and cedar-bird, the latter by far the most so. Judge Ramsdell, of "Traverse County, loses nearly all his cherries in this way, and he is "going to let his trees go down." And so—with even more emphasis,—from a cloud of witnesses throughout the Republic. But Legislative stolidity neither heeds nor cares, maintaining the safeguard of an uninterrupted close season, and rendering useless, through partial domestication, many species of birds that would be of admi ted service if relegated to their *fera natura*. Revive the timorousness, that should never have been allayed, by a generous use of the shot-gun during the summer months, and thus compel them to substitute the *Melolontha* for the berry and stone-fruit. With fewer of his exquisite strawberries in their beaks, our friend upon Sunnyside may reasonably expect a surfeit of that strident noise which he fondly mistakes for melody. Frightened from the Farmstead and Garden, there may be some hope of a return to be derived by those who have had wit and will to plant the Peach. It is not extermination of Frugivorous Birds that has been or is now advocated in these Reports. Rather the adoption or license of that old-time policy which, by thinning out their numbers for a season, kept alive their innate timidity and forced them to get their living according to the dictates of Nature. If the sentimentalist desires to convert his grounds into an aviary, no one will object. But let him keep his pets confined, or restrain them from injuring his neighbors. With a close quarantine, even the TURDUS may be spared.

The employment of *Gum Shellac* as a styptic in cases of the excision of limbs from trees, has long been approved. Many years ago when its price had become excessive, under the combined oppression of a prohibitory tariff and a depreciated currency—inevitable fruits of a Civil War—your Secretary advised the use of *Gas Tar* as a substitute. Quite lately, in reply to a query from a correspondent, the London (Eng.) *Garden* remarks that "Gas Tar put on the stems of trees would, "we fear, prove injurious to them." So our learned associate, the Editor of the *Gardener's Monthly*, referring to "most absurd notions." cites the following from the pen of MARSHALL P. WILDER, in the Massachusetts *Ploughman*: "In the Ploughman of May 4th, a writer

"signing himself J. L. B., states that he used coal tar on fruit trees to "protect them from the ravages of mice, by the recommendation of "Marshall P. Wilder, and thereby destroyed or injured his fruit trees. "I never gave such advice, nor should I have used tar of any kind "without first wrapping the tree in cloth or other material so that the "tar might not come in contact with the bark of the tree." A most eminent authority, indeed. Nevertheless your Secretary cannot doubt the results of twenty years' personal experiment, nor challenge the actual facts within his daily notice. He has applied Gas Tar, hot or cold, as came most handy, upon Cherry and Pear trees in his own garden, in every instance of pruning that seemed to require exclusion from atmospheric influence. No deleterious effect has ever followed. If fault could be found with his trees, it would be that their growth has been too thrifty. Their fruit has been exhibited occasionally, and reflected no discredit upon their mode of cultivation. The tar was invariably applied to the freshly-pared surface of both bark and wood. A callus would form in due time, such as never developed under different treatment. Occular demonstration of this truth may be had by any one who will trouble himself to inspect the Shade-Trees of the City of Worcester—notably on Elm Street, just above the house of Dr. Francis, which has strikingly recovered from the effects of a bad fracture. More attention has been bestowed upon this matter than its importance would seem to justify. But it is ever timely to vindicate the truth; and nothing but truth should appear in a Report that is issued under the sanction of this Society. Especially in times like these, when "every little makes a mickle," may time and space be spared for the advocacy of a cheap and sure agent, in lieu of one that is more costly and less efficient.

Our exemption from killing frosts, until so recent a date, deserves to be put on record. Until the night of the 29th ult., plants as tender as the Geranium remained unaffected by cold in one of the most exposed places in Worcester. The Tomato, and other sensitive vegetables matured their fruit without check or loss. Grapes have fully ripened, although that might have been said with truth three weeks since, of even the *Iona*, in an unusually sheltered and sunny position. The experience of this Autumn only confirms the opinion, formed after long observation, that by the use of some of that forethought and discretion which provides hay-caps in anticipation of summer showers, many plants and vegetables might have their existence prolonged for weeks

There are usually one or two nights of sharp frosts to warn us that the summer is at an end. Thereafter, were slight precautions taken, garden and grounds might be gay with the unimpaired radiance of Aster, Geranium and Salvia. And the fall of the leaf is sufficiently depressing, to demand for its counteraction every influence of nature or art that may cheer and enliven. The protection or shelter required has only to be timely; it need be but slight. The warmth of a fir-tree often matures the clusters upon a vine, which would have perished half-grown or unripe, upon the bleaker support of a trellis.

The terrific Frost, 30° Fahrenheit, of A. D. 1860–61, that preceded the War—fit usher of that and similar calamities—froze the very life out of Quince, Cherry and Peach trees. Their subsequent existence was rather a struggle for resurrection than recovery. Some were destroyed outright. Of others, the vitality was so far impaired that they had not sufficient stamina to rally, and therefore yielded readily to the first attacks of disease. Latterly the faith of persistent cultivators has been rewarded. The Cooledge, Old Mixon and Crawford appeared at the New England Fair, as for some years past upon our own tables, without taint of the *Yellows*. In too many specimens, however, that insidious disease betrayed unmistakable marks of its lurking corruption. But all experience goes to show that when sound, healthy trees are planted, there need be little fear of adverse climatic influences. Only once in a generation, possibly not so often, do the princes of the powers of the air combine to wage exterminating war upon Pomona.

The terms of eulogy were exhausted by reporters for the newspaper press, in their descriptions of the quality and profusion of the *Peaches* at the late New England Fair Yet there were but forty-four (44)plates in all; and among them, a single variety—the Crawford—was largely predominant. But twenty-two (22) years previous, one hundred and thirteen plates of Peaches had been shown at a single, local Exhibition of the Worcester County Horticultural Society. And at that Exhibition two contributors displayed eleven (11) distinct varieties, while one exulted in the remarkable number of thirty (30). Truly our progress, since A. D. 1856, has not been in the line of either fecundity or novelty.

Apprehensions of a short crop of Pears were early expressed and have been, in great measure, justified. Of some varieties, it is true, there was a profusion, notably that half-appreciated kind, the *Louise Bonne de Jersey*. Your Secretary is generally accredited with the

Washington on the brain. He never fails to have an ample yield of it upon his trees. Yet of many species there has been hardly a specimen; a default that was painfully apparent at the New England Fair, even if it was held too early. Whether we exact too much from our Pear trees, a deficient yield in one year off-setting the excess in that which preceded; or fail to replace with the right nutriment that primordial fertility which constant cultivation must needs exhaust; or exceed their limit of old age, to which trees are as subject as all other forms of animal or vegetable matter: in any event, and however viewed, we are furnished with food enough for reflection. It answers nothing to tell us of the exceeding long life of the Stuyvesant Pear-tree, or of those patriarchs which perhaps even now survive, in the Kaskaskia Bottom—a memorial of the French settlers. How much better were they than choke-pears, of no value to enjoy or perpetuate! What we have to determine for the future prospects of our Fruit Orchards is, whether with the extreme and forced developement of quality, as in all other high civilization, sin and death do not inevitably enter. Ordinarily, we exact or suffer enormous crops, year after year, for a life-time, possibly compensating this vital drain with a little stable manure, and then wonder that the same trees do not yield in continued and unimpaired abundance. We sometimes allow our fields to lie fallow: "root hog, or die!" coarsely paraphrases the injunction that we place upon our orchards. Upon the trees that did bear, in A. D. 1878, there were produced some noteworthy specimens. A Committee of this Society, eighteen years ago, constituted of such experts in Pyriculture as George Jaques, John Milton Earle, D. Waldo Lincoln, John C. Ripley and Jonathan Grout were moved to comment upon a "very remarkable increase in weight—an average of two ounces apiece in twenty-four specimens of as many varieties—chiefly to be attributed, no doubt, to a very favorable season; still much also must be claimed for a gradual improvement in the modes of cultivation, of which we every year have new evidence."

That Committee noticed a specimen *Duchesse* that weighed thirteen and one-half ounces. What would they have said could they have seen the one grown this year, by our efficient Treasurer, which turned the scales at twenty-two and one-half ($22\frac{1}{2}$) ounces? or his ten that balanced twelve and one-half ($12\frac{1}{2}$) pounds! The same gentleman (Mr. Newton) has also exhibited twelve pears of the variety *Winter Nelis* that weighed five pounds, nine and three-fourths ounces; thus

surpassing by two pounds, the heaviest heretofore shown upon our tables. I am aware that these weights—of the *Duchesse* at least—are not to be compared with those of the ponderous specimens developed by the disciples of an Eclectic Pomology, in the vicinity of the State House, who with the fear of MARSHALL P. WILDER before their eyes, sit up o' nights, culling, trimming, and stimulating. But what would you have? As the rustic belle replied to her city-bred lover, who thought to depreciate the Harvest Moon,—"Yes, I know, but won't it do for the country?"

At the Annual Meeting of the TRUSTEES, November 7th, A. D. 1877, it was voted that "The Secretary be authorized to procure a Portrait "of the late Frederic William Paine, to be painted by Mr. J. S. Lin- "coln, of Providence, R. I., and to cause the same to be suspended in "the Library." That vote has been executed and the Portrait of Mr. Paine now hangs, in plain sight, from these walls. With what success the labors and singular faculty of the artist have been crowned, you can better judge, when you learn that a duplicate was ordered by the family after they had seen the painting achieved for us. You have been fortunate in the attempt to perpetuate his expressive features. You are more fortunate in the possession of this Estate—Real and Personal —a Trust for the common weal as it is, which his zeal and untiring devotion did so much to establish and conserve. That the place of our first Treasurer is so well filled now, may be accounted a piece of exceeding good luck. But no present happy chance can depreciate the value of Mr. Paine's services heretofore, or lessen the estimation in which his exemplary devotion to its best interests should ever be cherished by the WORCESTER COUNTY HORTICULTURAL SOCIETY. Should it be your will, atsuch inconsiderable expense, to continue the policy of perpetuating upon canvas the familiar lineaments of our worthies, to whom the established prosperity of this Society is mainly due, you cannot go amiss or need to go far. There is one benefactor, whose munificence equals, if it has not exceeded that of Mr. Waldo, and whose cordial co-operation was never, under any circumstances, withheld. Years since, when our debt had become oppressive, his generosity instigated and achieved measures that resulted in our substantial relief from the more onerous weight of the burden. His contributions to our Exhibitions are never lacking; constituting, both in amount and quality, a leading attraction, without which they would be sadly deficient. What need to mention the name of STEPHEN SALISBURY, to enable you to

comprehend whose portrait, in sequence, your Secretary advises you to procure. And to procure now,—in his lifetime—that he may know that we were not churlishly ungrateful for a liberality, the greatness of whose sum might only be measured by the graceful and unobtrusive manner of its manifestation.

This Report would be sadly imperfect were it void of allusion to the recent death of BENJAMIN FRANKLIN THOMAS, followed so soon by that of HENRY CHAPIN. In the catholicity of their tastes there was room for a rare enjoyment of Horticulture. In the manysidedness of their characters, whereof, in either, the Poet's phrase is thoroughly descriptive:

"totus, teres, atque rotundus."

The love of Nature was a transcendant passion. In early manhood, when ampler leisure permitted; as in their maturer years, after the cares of an engrossing profession left little time for recreation; they could always be found ready and willing to prepare a Report or deliver an address in your service. Nor was their zeal lacking in discretion; for few knew better whereof they discoursed. But two or three years have elapsed since the *St. Michel* pears of Judge Chapin were denied a premium, because of their extreme size; the Committee doubting their genuineness because they were so large! And, although the *Beurre Bosc* of Judge Thomas were never challenged, it was not because they lacked magnitude, or any essential to perfection, as his competitors had occasion to admit. Neither were these tastes out-lived; refined, if also in the best sense of the old Saxon idiom, homely. As private citizens, or Officers of State, they were not disdainful of the Annual *Cattle Show*, or the HORTICULTURAL EXHIBITION that originated later. The "Report on Fruits," of our own Society, discloses that "a fine "basket of *St. Michel* Pears was brought to the Fair by B. F. Thomas, Esq.," in A. D. 1841. And it is within the knowledge of your Secretary that his contributions were continuous and uninterrupted, until his departure from Worcester. At the very recent Fair of the *New England Agricultural Society* a lot of Fruit from Henry Chapin attracted especial notice, not so much from its quality, which was unimpeachable, as from the general surprise that one, in his condition of sore distress, should have even thought or cared to send it in.

Our Society can ill afford their loss. Shall their places remain vacant? Who will step forward to fill them?

"Homo sum; nihil humani
A me alienum puto."

Muster in your cavalry, if you will, and enroll your torch-bearers Nay, barbecue your beef, if you cannot stomach steaks after the Abyssinian method! And yet life must, in the after years, have some higher aspiration than for a complete mastery of such politics as grind their grist for the silver-gambler or stock-jobber, or even dominate the sand-lot and sewer.

All which is respectfully submitted, by

EDWARD WINSLOW LINCOLN,
Secretary.

Horticultural Hall,
WORCESTER, MASSACHUSETTS,
Nov. 6, A. D. 1878.

REPORT OF THE LIBRARIAN.

To the Members of the Worcester County Horticultural Society:

In accordance with the custom of the Society, the Librarian herewith submits his Annual Report. He is happy to state that the Library has been more extensively used the past than the previous year. At the commencement of the year now just closed, the Librarian made an effort to obtain Horticultural and Agricultural Reports from the several states. He succeeded in obtaining Reports from a few, though from some he got no response, either by letter or books. The Secretaries of the Agricultural Boards or Horticultural Societies from eight States responded to his letters, either by letter or by forwarding the Reports desired, and forty-five volumes were received from the eight States, as will be seen by the report of the additions to the Library hereunto annexed.

The Library Committee as usual have purchased several valuable books which will appear in the list reported.

Through the kindness of our Secretary an excellent likeness of Hon Marshall P. Wilder, nicely framed, has been hung in the Library, and also the Centennial Diploma of the Secretary, handsomely framed. The Committee have also had the Society's Diplomas framed and hung in the Library.

The following comprise the books added to the Library the past year, by gift or purchase :

Semi-Tropical Magazine for 1877.

Report of Commissioner of Agriculture, 1874–1875 and 1876 ; from E. W. Lincoln.

Notes on Botrychium, simplex ; Hitchcock ; by George E. Davenport; Society.

The art of Grafting and Budding ; by Chas. Baltet ; Society.

Transactions of Massachusetts Horticultural Society ; from E. W. Buswell, Treasurer.

Schedule of Prizes of Massachusetts Horticultural Society ; from E. W. Buswell, Treasurer.

Ferns of North America ; by Prof. Daniel C. Eaton of Yale College ; Parts 1, 2, 3 ; Society.

Proceedings of the 5th Annual Meeting of the Illinois State Farmers Association ; from W. C. Flagg, President.

Proceedings of the 5th Annual Session of the National Agricultural Congress; from W. C. Flagg, President.

Transactions of the Nebraska State Horticultural Society for 1877; from D. H. Wheeler, Secretary.

The Superficial Deposits of Nebraska; by Samuel Aughey, Ph. D.; from D. H. Wheeler, Secretary.

The State of Nebraska as a Home for Emigrants; from D. H. Wheeler, Secretary.

Report of the Fruit Growers Association of the Province of Ontario, for 1877; from D. W. Beadle, Secretary.

Transactions of the Massachusetts Horticultural Society; from Robert Manning, Secretary.

Agriculture of Maine, 1871; 1874–5; 1875–6; 1876–7; from C. L Flint; Secretary of the Massachusetts Board of Agriculture.

Agriculture of Maine, 1870–1872–1873–1876-1877–8; Samuel L. Boardman, Secretary Board of Agriculture of Maine.

New Hampshire Agriculture, vol. 5, 1875; vol. 6, 1876; from Jas. O. Adams, Secretary of State Board, New Hampshire.

Ohio Agricultural Report, 1867–1870–1871–1872–1873–1874–1875–1876; from C. L. Flint, Secretary.

Report of Connecticut Board of Agriculture, 1866–1867–1872–1874–1875–1876; from C. L. Flint, Secretary.

Report of Connecticut Board of Agriculture, 1868–1871–1873–1877; from T. S Gold, Secretary of Connecticut State Board of Agriculture.

Transactions of Illinois Horticultural Society, vol. 10, 1876, vol. 11, 2 vols, 1877: from O. B. Galusha, Secretary State Horticultural Society.

Journal of Horticulture, vol. 33; conducted by G. W. Johnson, F. R. H. S., and Robert Hogg, LL. D.; Society.

Special Report Department of Agriculture, No. 6, 1878; from Frederic Watts, Commissioner of Agriculture.

Agriculture of Massachusetts, 1877–8: with index from 1853 to 1877; from C. L. Flint, Secretary State Board of Agriculture.

Curtis's Botanical Magazine; by J. D. Hooker; vol. 33; colored plates; 8vo; London. 1877; Society.

Florist and Pomologist; a pictorial monthly magazine of Flowers, Fruit and Horticulture; conducted by Thomas Moore, F. H. R. S.; 1878; large 8vo; colored plates; London (still publishing); bound; Society.

The Pinetum; being a synopsis of all the Coniferous Plants at present known, with descriptions, history and synonyms, and a comprehensive, systematic index; by George Gordon, A. L. S.; Society.

Floral Magazine; figures and descriptions of the choicest new Flowers for the Garden or Conservatory; by Richard Deane; new series; 1878; large 8vo.; 56 large colored plates; London; Society.

Suburban Home Grounds ; illustrated with upward of 200 plates and engravings ; Society.

Flore des Serres et des Jardins de l'Europe Annales Générales d'Horticulture ; L. Van Houtte, editor and publisher ; Tome 21 ; large 8vo ; many cuts and colored plates; Gand ; Belgique ; 1875 ; (still publishing); Society.

Synoptical Flora of North American Botany ; by Asa Gray, LL. D ; Society.

Bibliographical Index to North American Botany ; by Sereno Watson; Society.

Ferns in their Homes and Ours ; by John Robinson ; Society.

Ferns of Kentucky ; with 60 full page etchings and 6 wood cuts ; by John Williamson ; Society.

First Annual Report of the United States Entomological Commission for the year 1877 ; relating to the Rocky Mountain Locust · with maps and illustrations ; from W. W. Rice, M. C.

Report of the Board of Commissioners on the Irrigation of San Joaquin, Tulare and Sacremento Valleys, of the State of California ; from W. W. Rice, M. C.

Native Flowers and Ferns of the United States ; from 1 to 12 inclusive ; by Thos Mehan ; Society.

Ferns of North America ; by Prof. Daniel C. Eaton of Yale College ; large 4to ; parts from 4 to 9 inclusive ; colored plates ; Society.

Notes on Trees and Tree Planting ; by C. S. Sargent ; from C. S. Sargent.

Country Gentleman, The ; vol. 43 ; 1878 ; Society.

Gardener's Chronicle, The ; 1878 ; folio ; Society.

American Agriculturist, The ; vol. 37 ; 1878 ; folio ; Society.

Agricultural Gazette, The ; 1878 ; London ; folio.

Gardener's Monthly, The ; vol. 20 ; 1878 ; 8vo.

Villa Gardener, The ; 1878 ; 8vo ; London.

Massachusetts Ploughman, The ; from George H. Noyes, proprietor and publisher ; 1878.

Transactions Department of Agriculture, Illinois ; vol. 8, 1869–70 ; vol. 10, 1872 ; vol. 11, 1873 ; vol. 12, 1874 ; vol. 13, 1875 ; vol. 14, 1876 ; from S. D. Fisher, Secretary Illinois State Board of Agriculture.

All of which is respectfully submitted.

JOHN C. NEWTON,
Librarian.

HALL OF FLORA,
November 6th, 1878.

MASSACHUSETTS AGRICULTURAL COLLEGE.

TRANSACTIONS

OF THE

WORCESTER COUNTY

HORTICULTURAL SOCIETY,

FOR THE YEAR 1879

COMPRISING OUTLINES OF FOUR LECTURES

ON SOME RELATIONS OF BOTANY TO HORTICULTURE,

BY PROF. GEORGE L. GOODALE:

ALSO, THE

ANNUAL REPORTS OF THE LIBRARIAN AND OF THE SECRETARY.

WORCESTER, MASS.
SNOW, WOODMAN AND CO., PRINTERS,
(Successors to Noyes, Snow & Co.)
1880.

INDEX

OUTLINES OF LECTURES ON BOTANY, ETC. . . . 3
(By Professor George L. Goodale.)
REPORT OF THE LIBRARIAN, ... 13
REPORT OF THE SECRETARY, ... 17

OUTLINES OF A COURSE OF FOUR LECTURES

ON SOME RELATIONS OF

BOTANY TO HORTICULTURE.

Delivered by Prof. George L. Goodale, of the University at Cambridge, before the Worcester County Horticultural Society, A. D., 1879.

It is the task of Botany to answer every question which we can ask respecting plants. Horticulture deals with the very practical matters of originating, improving, and perpetuating garden plants. Therefore the questions which belong to gardening belong also to a department of applied Botany, and for a rational solution of the problems in Horticulture, we must look to the principles of Scientific Botany. The structure, food, growth, reproduction and diseases of plants occupy a wide field of research, from which the horticulturist, if he would be successful, must select rules for his guidance. For the purpose of these lectures the field can be merely glanced at, and not carefully surveyed ; all that can be done is to ascertain accurately a few of the more important points, and learn their relations to minor details.

The first groups of topics relate to the seed, its germination, and the development of the plant up to the period of its flowering. The second will treat of the production of seed, and the

perpetuation of the species. Lastly, must be considered the improvement of varieties and the obtaining of new and desirable sorts. This last can be made plainer by a brief study of the history of some of the more useful garden plants, and of the methods by which new varieties have been originated. This course of lectures will treat only of flowering plants; that is, of the plants which produce seeds having germs, and therefore the subject of the flowerless plants, like mosses, moulds, and ferns, will be left untouched.

I. From Seed to Flower.

A seed consists of a germ, or embryo plant, provided with a sufficient store of food, and having integuments for its protection. The germ foreshadows the future plant, and usually possesses, ready formed, a minute stem tipped with a root and seed leaves, between which is held a bud. All these parts are rudimentary, often existing as the merest hints of what can grow from them. Nevertheless, the germ can be subjected to serious mutilation without utterly destroying it. Extended experiments have shown that the embryo possesses a remarkable power of repair. (These experiments upon the ability of seeds of different plants to resist injury were described in detail, and the following conditions of germination were discussed, chiefly with reference to the planting and care of garden seeds.) The conditions of germination are moisture, warmth, and oxygen. The conditions which depend upon the seed itself, and which may rather be called requisites to speedy and healthful germination, are 1st, a proper degree of ripeness; 2d, freshness; 3d, soundness. (The practical bearings of these questions upon the length of time during which seeds remain suitable for use, and upon other practical topics, were stated at considerable length.)* If any of the more common garden seedlings are compared at different stages of their growth, they will be found to be made up of roots, stem, leaves, and a few delicate plant-hairs. "Now these are all the parts that any flowering plant ever has; the thorns and tendrils, and showy

* Part of the phraseology of the outlines here given has been taken from Dr. Goodale's work, "Concerning a Few Common Plants."

leaves and blossoms, and all the parts of every blossom, are only modified forms of one or more of the four parts or members just spoken of. This is the statement, made abruptly and in few words, of the accepted theory of plant structure." In a seedling, how many times are parts which are made up of a *joint of stem and a green leaf, or a pair of them*, repeated? In one seedling, there will be found six or more of these repeated parts; in another, only two or three, in another, perhaps only one besides that previously existing as the germ itself. The "repeated parts" differ greatly in their shape and size, and also in their kinds of work.

"Now these 'repeated parts' are *helping parts* or *helpful parts*. These parts are mutually helpful: they help one another. The whole plant is made up of just such parts, which have taken different forms for different kinds of work; as, for instance, in the leaves of the pea.

The seedlings of garden plants show these helpful parts, arranged in regular order. From the lowest of the helpful parts of the bean, the root started; but, in the Indian Corn, roots have started off also higher up. Again, they have plant-hairs in different places. Upon the youngest rootlets of the wheat or corn planted on wet paper, the hairs are very abundant; and there are some hairs scattered on the leaves of the bean. These roots and the hairs are to be examined later.

The succession of the helpful parts will be noticed best in slips of the common plants, "Wandering Jew," or Tradescantia, Heliotrope, and Bouvardia. In the case of the Tradescantia, the growth of a slip or cutting in moist sand, or with the lower end in water, is very instructive: roots grow from the lowest of the helpful parts, and furnish the food needed in solution, new leaves expand above to get food, as we shall see, from the air; and thus a separate, self-supporting colony is established. A flowering plant is a community from which many such colonies might be removed.

Next, arises the question: Where do these helpful parts come from? Of course, from buds. A bud is the promise of a branch. The application of this to the case in hand will force the conclusion that, since whatever springs from a bud is some sort of a branch, a developed flower from a flower-bud must be a branch too. And so it is. The helpful parts are here arranged in a very regular manner, and many of them are greatly changed in form and in work. From this subject, to be examined fully

in another place, we pass naturally to the development of buds underground. A leaf-bud — that is, an incipient stem — develops by lengthening the distance between the successive leaves. Under ground, in firm soil, such buds develop at great disadvantage; and the stems soon become more or less distorted; the degree of distortion depending somewhat upon the character of the soil in which growth takes place. The extremes are to be found in Beach Bind-grass (*Calamagrostis arenaria*), which has long internodes or joints of stem, and such plants as *Iris*, or Blue Flag, and Solomon's Seal. In not a few cases, the growth of the underground stem gives rise to very curious forms, which may be puzzling at first; for instance, the solid bulb or corm of crocus, and the thickened tip of the underground branch of potato, namely, the tuber itself. The "eyes" of the potato are merely disguised buds which have a good stock of food behind them. Potato-planting is colonizing, in which the tubers are the colonies separated from the home community. A very bad kind of such colonizing takes place when the underground stems of Witch-grass (*Triticum repens*) are only broken off, but not taken out of the soil, in hoeing the ground. The helpful parts are detached from each other, and each fragment serves as a starting point for a new plant. In grafting or budding, one or more groups of helpful parts are removed, not to soil where they would have at once to shift for themselves, but to a kindred plant which furnishes nutriment from the very first.

As we have seen in the examination of seedlings and cuttings, roots can start from different points of the stem. In some cases, they can arise from the leaf-stalk or even from the leaf-blade itself. The root, whatever its origin in any case may be, grows in length only in one way; namely, at a point just behind its very tip. This growing point is usually protected by a peculiar cap, which insinuates its way through the crevices of the soil. If roots should grow as stems escaping from the bud-state do, — that is, throughout their whole length, — they would speedily become distorted. But, since they grow at the protected tips, they can make their way through the interstices of soil, which from its compactness would otherwise forbid their progress.

[The relation of roots to soil were spoken of in detail.]

If the roots of the youngest seedlings of wheat or flax are carefully examined, they will be seen to be covered, except near

the tip, by a very delicate fuzz made up of extremely fine hairs. These are the root-hairs, which serve to take up the water-food for plants. They are so exquisitely delicate that the slightest touch crushes them; and, if the plant is lifted from the soil, all the root-hairs are left behind, or else a few hold fast to finer particles of soil which are brought away.

Of course, a microscope is very necessary in any careful examination of root-hairs; but the hairs can be seen without one in the cases mentioned, and in some others, where they are looked for carefully. It is these root-hairs, and not the very tips of the roots, which absorb water. This can be studied practically in the way pointed out by Ohlert, a German school-teacher, who first published, in 1837, an account of root-hairs. The tips may be carefully removed, and the wounds painted over, and the roots placed again in water, where the hairs can have a chance to absorb, if this is their office.

Root-hairs are found only on the newer parts of roots; and these are, therefore, the only active absorbents of dilute aqueous solutions."

By the root-hairs, dilute solutions are carried up from the soil to green tissue upon the younger stems and in green leaves. Here the dilute solutions become more concentrated by evaporation and transpiration, a process which in the leaf is governed largely by delicately balanced valves which are chiefly on their under surface. "Within the tissue of green leaves, there can be found granules of a leaf-green substance. Under the influence of sunlight, carbon dioxide, a gas which exists as an impurity in the atmosphere, and which is readily taken up by green leaves, undergoes, together with the water within the leaf, changes which end in the formation of starch or something very much like it. While such an operation is going on, oxygen is given off by the leaves. The relations of oxygen and carbon dioxide to animal respiration are to be pointed out to the pupils; and it is to be made clear that the evolution of oxygen from green leaves, goes on only in the light. In all its kinds of activity, except that of leaf-green in sunlight, the plant takes in oxygen and gives off carbon dioxide. But the work of leaf-green in sunlight, namely, the conversion of inorganic matter into organic substance, is the chief work of the common plants about which we have been studying. This work is *assimilation.*

The assimilated product made by green leaves in sunlight is stored up in many forms and in many places, such as roots,

stems under and above ground, leaves, and seeds. It is used for many purposes, chiefly the following: making wood, and the like, building up new parts, forming flowers, and making seeds.

To sum up the work of green tissues, whether on the stem or in leaves themselves, it may be said that they lift dilute solutions from the roots to the light and air, there concentrating them; that they are the factories where starch or something very similar is made."

[The effect of plants on the air of rooms, and the relation of plants to poisonous gases in the air of cities, were described at considerable length. Wardian cases and window gardening were also treated of.]

"When the trunk of a tree or the stem of an herbaceous plant is carefully burned in the open air, there remains behind a certain amount of rusty-gray ashes. This substance represents the mineral matters taken in solution by the roots, and now changed somewhat by combustion. Some plants contain more of this mineral matter than do others, but all of them have a trace; and there is a substantial agreement in the chemical elements of the ash of different plants. Some of the elements which have been detected in the ash are Iron, Potassium, Calcium, Magnesium, Phosphorus, and Sulphur. These exist in composition in the ash,—for instance, the Potassium is there a carbonate; but as to the manner in which they existed in the plant, and how they were there compounded, authors are not exactly agreed. Nor is it precisely known what part each plays in the life and health of the plant. There is good reason for believing that Iron is indispensable to the efficiency of chlorophyll, and that the salts of Potassium have much to do with the production of starch. Besides the substances just mentioned, some compound of Nitrogen is essential to the growth of plants; and this is furnished, likewise, through the roots. If, therefore, it is desired to have plants grow in a healthy and vigorous manner, they must not only be placed under the requisite physical conditions, but good food in proper amount must be furnished.

Plants, as we have already seen, obtain their carbonic acid of the atmosphere. The soil furnishes other kinds of matter used as plant-food. To show how small a part is taken in certain cases by the mineral constituents of plant-food, it may be well to call to mind one of the earliest experiments upon the subject of vegetable nutrition. Van Helmont placed in a proper receptacle exactly two hundred pounds of carefully dried soil, and

then planted therein a willow, which weighed just five pounds. The soil was enclosed by a cover so that no dust from outside could reach it; and it was kept moist with enough water, as occasion required, for five years. At the end of that time, the willow was removed, and the soil separated carefully from the roots. The willow weighed, then, one hundred and sixty-four pounds; but the soil, again thoroughly dried, as at first, had lost only two ounces! Although the experiment was not conducted with the exactness which characterizes modern research, it was a very excellent one for the time in which it was performed. It must be added that Van Helmont erroneously concluded that the plant had taken all its nourishment from the water, whereas we know to-day that the plant obtains from the atmosphere a large part of the material out of which its structure is made."

[The relations of the soil and other surroundings to the successful treatment of garden plants and orchard trees, occupied much of the lecturer's attention at this stage of the course.]

II. From Flower to Seed.

This completes the cycle of plant-life.

"A flower is a branch, with leaves for the production of seeds. It is easy to find fault with every definition of so diversified a mechanism as a flower, but the definition just given will answer our present purpose very well.

A flower is a mechanism for the production of seeds. All parts, therefore, which are directly concerned in the production of seeds, must be taken into account. Even the floral leaves or bracts, which are only indirectly tributary to the formation of seeds, must be regarded. The outer circles, the calyx and corolla, are generally termed unessential, because they are frequently merely protective, while the stamens and the carpels are the essential parts. The carpels contain the ovules, which are to become seeds; the stamens furnish the pollen, by the indirect action of which this change is to be brought about. Therefore, we might regard the ovules and the pollen as the only essential parts in the production of seeds. Each stamen consists of an anther, which is often supported upon a filament, or slender thread. 'The anther is a sac filled with pollen, which most generally is like fine dust, but which is shown by the

microscope to consist of minute grains of characteristic shape, size, and markings. The pistil is made up of one or more carpels, distinct or more or less completely blended together, and usually comprises three parts: (1) the ovary, holding the ovules; (2) the style, surmounting the ovary; and (3) the stigma, a point, or knob, or line of sticky surface at the side or summit of the style. The style may be wholly wanting. When the pollen acts upon the stigma, each grain may send down, after a time, a slender tube, which at last reaches an ovule. Here the contents of the tube act in some way upon the contents of a cell, or a group of cells, in the ovule, in which a new development begins, ending in the production of an embryo plant. The ripened ovule is a seed; the ripened ovary, with its contents, and often with some of its contiguous parts adherent, constitutes the fruit." It would seem, therefore, at first sight, as if flowers, in order to perfect seeds most readily, ought to be so constructed that the pollen can fall upon or reach the stigma without any difficulty. In some flowers, like the late and small flowers of our violets, and in a great many other cases, this is so: the pollen is placed by the anther directly upon the stigma, or the stamen is so placed that the pollen can very easily fall upon the stigma. But there are innumrerable instances of just the opposite; and in these cases the tansfer of the pollen must be made by the wind, by insects, or by some agent. Some plants have the stamens only, while others of the same species have only the pistils. Willows are good examples of this kind of separation. Indian Corn is an example of a less complete separation. In this, the flowers with stamens form the plume above, and the pistils make up the ears with the silk (the styles and stigmas) below. The transfer of the pollen of Indian Corn is made by the wind, which can carry such dry dust to long distances. The pollen of our forest trees and shrubs is transferred by the same means, and it frequently falls by the way, collecting in large quantities on the leeward shores of lakes, where it resembles sulphur. There are many cases of separation of the stamens and pistil, which are just as complete as Willow and Indian Corn, so far as the possibility of the pollen reaching the stigma without help is concerned; and yet the stamens and pistils are in the very same flower. For instance, in some orchids the pollen is packed away in a little pocket, from which it cannot fail to reach the stigma, but from which it is readily detached by the insect which comes to the flower in search of nectar. The

insect unconsciously carries the package of pollen off to another flower, and here it is brought in contact with the stigma of that flower. These are among the most striking cases of complicated mechanism by which an end is reached.

The object at present is merely to call attention to the interesting field opened before every observer of flowers. The transfer, in many cases, must be made by insect aid; but how can insects be made to work for something which does not concern them? There are a few insects which are pollen-eaters. Such, coming to flowers for the pollen they get, might scatter more or less pollen around, and transfer some of it from one blossom to another? but there are more which are fond of the nectar of flowers. The nectar is for insects. It occurs in very diverse places in different blossoms, but it is almost always extensively and attractively advertised. Bright colors, with striking contrasts (the "nectar spot"), or with lines of contrasting color converging towards the cup of nectar (the "nectar guides"), show the insect visitors where their food can be found. A little attention will make clear the meaning of many of the colors which otherwise might be passed by without thought."

Odors in flowers are, in general, indicative of the presence of nectar. The crossing between varieties of the same species of plant produces seeds which, in general, yield stronger plants than those which result from the action of the pollen of a flower upon the ovules of the same flower, or even upon the ovules of another flower on the same plant. The crossing between well marked varieties has given rise to some of the most desirable garden plants now cultivated, and plants from such crossing have been incorrectly called *Hybrids*. This term should be restricted to the crossing of different species; by hybridination in fertile cases, very extraordinary results have been reached.

(The method of crossing, and the results, were very fully explained, and rules were laid down for the guidance of intelligent students. Such rules are based, for the most part, upon the studies of German investigators.)

When a good variety has been obtained by chance, as we call it, or from successful crossing, it must be perpetuated by some form of colonization, or bud-separation.

(This, in all its practical forms, was discussed, and certain special cases were referred to; for instance, the mutual relation of stock and scion, and the judicious selection of each.)

Following this came a brief history of the plants of the kitchen-garden, the flower-garden and orchard, tracing the improvement of varieties from their origination down to the present time, and rules for their further improvement were given. These rules, in every case, must be sought in the field of Scientific Botany.

REPORT OF THE LIBRARIAN.

To the Members of the Worcester County Horticultural Society:

The Librarian does not desire to occupy much of your time by his report. He only wishes to give you such information as seems to him desirable, that you may understand the condition of the Library.

During the past winter quite a number of desirable books were placed in the Library, by the Library Committee, which seemed o meet a want that was felt by many of our gardeners, and he believes that the introduction of those books into the Library, has had much to do in increasing the number of books taken from the Library, the number this year being double that of last year.

Without further comment, he will give the additions to the Library the past year.

Native Flowers and Ferns; by Thomas Meehan; parts 13 and 14; Society.

Vegetable Plants; by J. F. Tillinghast; Society.

Native Flowers and Ferns; by Thomas Meehan; parts 15 and 16; Society.

Ferns of North America; by Prof. D. C. Eaton; parts 10 and 11; Society.

Winter Greeneries; by Edwin A. Johnson, D.D.; Society.

Play and Profit in Garden; by Rev. E. P. Roe; Society.

Talks on Manures; by Jos. Harris, M. S.; Society.

Native Flowers and Ferns; by Thomas Meehan; parts 17 and 18 Society.

Garden, The; an Illustrated Weekly Journal of Gardening, founded and conducted by Wm. Robinson; vol. 15; 4to; London, 1879 (still publishing); Society.

Gardener's Chronicle, The; vol. 12; 1879; a Weekly Illustrated Journal; Society.

Agricultural Gazette, The; an Illustrated Journal for Farmers; 1879; Society.

Villa Gardener, The; 1879; 8vo.; London; a monthly periodical; Society.

American Agriculturist, The; vol. 38; 1879: folio: Society.

Transactions Massachusetts Horticultural Society; 1878; part 2d; by Robert Manning, Secretary.

Gardener's Monthly, The; vol. 21; 1879; 8vo.; edited by Thomas Meehan; Society.

Country Gentleman, The; vol. 44; 1879; Society.

Massachusetts Ploughman, The; vol. 38; 1879; from George H. Noyes, publisher.

Native Flowers and Ferns; by Thomas Meehan; parts 19 and 20; Society.

Ferns of North America; by Prof. D. C. Eaton: parts 12 and 13; Society.

Text-Book of Botany; by Julius Sachs, Prof. of Botany; Society.

How Crops Feed; by Samuel W. Johnson, M. A.; Society.

Pardee's Strawberry Culture; Society.

Field's Pea Culture; Society.

High Farming without Manure; by M. George Ville; Society.

Tim Bunker's Papers on Yankee Farming; Society.

Open Air Grape Culture; by John Phin; Society.

Chemistry of the Farm and the Sea; by James R. Nichols, M. D.; Society.

Culture of Small Fruits; by E. P. Roe; Society.

Our Farm of Four Acres; Society.

Farming with Green Manures; by C. Harlan, M. D; Society.

Squashes; How to Grow Them; by Jas. J. H. Gregory; Society.

Onion Raising; The Way to Raise Them; by Jas. J. H. Gregory; Society.

Carrots; How to Grow, Keep and Feed Them; by James J. H. Gregory; Society.

How Crops Grow; by Samuel W. Johnson, M. A.; Society.

Semi-Tropical Magazine; 1876; edited by Harrison Reed; Society.

Native Flowers and Ferns; by Thomas Meehan; parts 21, 22, 23 and 24; Society.

Florist and Pomologist; 1878; Thomas Moore, F. L. S. editor; Society.

Curtis' Botanical Magazine; vol. 34; by Joseph Dalton Hooker, M. D.; C. B. &c.; Society.

Journal of Horticulture; vols. 34 and 35; conducted by G. W. Johnson, F. R. H. S.: Society.

Floral Magazine; Figures and descriptions of the choicest new Flowers for the Garden or Conservatory; by Richard Deane; new series; 1878; large 8vo.; 47 large colored plates; London; Society.

Ferns of North America; by Prof. D. C. Eaton; parts 14, 15, 16 and 17, 18 and 19, 20 and 21; Society.

Annual Report of Board of Agriculture of N. H.; by James O. Adams, Secretary; 1877 and 1878.

Transactions Massachusetts Horticultural Society; parts 1 and 2; also Schedule of Prizes; by E. W. Buswell, Treasurer.

All of which is respectfully submitted.

JOHN C. NEWTON,
Librarian.

HALL OF FLORA,
Nov. 5th, 1879.

ANNUAL REPORT OF THE SECRETARY.

To the Members of the Worcester County Horticultural Society:

On the third day of March, A.D. 1842, the General Court of Massachusetts passed an "Act to incorporate John Green, "Anthony Chase, Frederic W. Paine, * * * their "associates and successors," by the name of the "Worcester "County Horticultural Society." John Green and Frederic W. Paine, were, long since, gathered to their fathers. Within the last twelve months Anthony Chase has followed them, leaving behind him the treasured memories of a long life spent in usefulness and honor. With his death closes the earliest chapter in our history. What Horticulture was, when he and his associates assumed the serious task of

"Advancing its science and improving its practice,"

there are few present old enough to remember. What it now is; and has become, mainly through the precept and example of those pioneers in the cause; you, the living members of this Society, can see for yourselves, in this commodious Hall, the valuable Library that surrounds us, and, more manifest yet, in the garden and orchard which everywhere, throughout town and county, blossom and yield in wanton profuseness. If Mr. Chase took a less conspicuous part than others, more demonstrative than himself, his zeal was not inferior nor his co-operation less efficient. His patience was illustrated in the testing of new varieties of fruit, for the introduction of which he may have been indebted to the enterprise of either Earle, or of Colton;

but in determining whose real merits no one was more earnest or apt. He was, perhaps, the last of our original members to relinquish the cultivation of the Plum; exhibiting specimens, in excellence and variety, long after every one else had succumbed to the black-knot and curculio. Of an equable temperament, he was well fitted for a pursuit that has no place for passion and yields no returns to impatience.

"*Their associates and successors!*" Do you realize that the entire responsibility has devolved upon yourselves? That it is for you, exclusively, so to direct the operations of this Society as to justify the prescience of its founders and vindicate your title to follow

"*Si non passibus æquis,*"

at least haltingly, in their footsteps. And it was a long step in advance which was taken, under your sanction, during the early winter.

These Reports have urged, for years, that this Society should encourage the study of BOTANY,—not merely for its own sake; or that our young women should be taught to distinguish those herbs whose savory messes are a substitute for love; but, more selfishly, as a means to an end. Much of the interest attaching to, or derived from our exhibitions, must be credited to the Floral displays that have been maintained with creditable success and without sensible intermission. As the city increases — for the guidance of the Society is ever more and more surrendered to the city — space for the Garden and Orchard must become yet closer restricted. Parlor-plants, however, will continue to be grown; while conservatories and green-houses are fostered, rather than diminished, as settlement and population concentrate. Whatsoever, then, tends to diffuse a wider knowledge of the manner in which plants grow, and in what simplest and best way to grow them, comes within your especial province, as "advancing the science and improving the practice of Horticulture." Looking to this object, the Committee on the Library — being authorized by a vote of the TRUSTEES — engaged PROFESSOR GEORGE L.

Goodale, of the University at Cambridge, to deliver a course of four lectures upon themes of congenial and cognate interest. The audiences might have been larger, with benefit to the community. But at that marriage-feast of old, they which were bidden were not worthy. Still, the supper was consumed. In this case, you will have eaten your cake and — have it. For, at the request of your Secretary, Prof. Goodale has prepared outlines of those Lectures, which, when published,— to use his own phrase,-- will constitute a "printed guide to the principles of modern Horticulture." Could you have made a better investment, although you had bestowed a few more premiums upon the Baldwin apple ?

In his latest Annual Report, your Secretary remarked that: "Our *Weekly Exhibitions* have been the life of the Society. But the faintest breath quivered in its nostrils when they were instituted. They awakened interest, commanded attention, and invited membership. Attracting the first flowers of spring, they could be made, by proper direction, to fill each successive week throughout the year, with ample suggestiveness to the eye or palate, until their close with the last fruits of winter. Every Exhibition would then have a freshness that can be attained in no other way. And novelty has a charm in itself. Your earnest attention is solicited for the policy, simply outlined as it is, of relinquishing the oppressive and unwieldy *Annual Autumnal Exhibitions* and applying the energy and means, absolutely wasted upon them, to magnify the Weekly displays."

The suggestion found acceptance, and the policy therein outlined, favor with your Trustees. Under their instructions a schedule was framed that, with all its imperfections, has worked to the realization of our common aim. An Exhibition was held December 5th, A. D. 1878, whereat a creditable display of Fruit inaugurated the new system. The meetings have been sustained without intermission; their success varying as to numbers in attendance, or articles displayed; but at no time without some indication of public interest. Criticism may perhaps

cavil at the conditions of a schedule which suffers awards — whether under their own specific names, or as "any other variety"—for such vain repetitions as the following :

Baldwin — Eight (8) distinct premiums, - -	$7 00
Hubb. Nonesuch — Five (5) distinct premiums, -	6 50
R. I. Greening — Six (6) " " - -	6 50
Rox. Russett — Five (5) " " - -	5 50

"*Qui facit per alium, facit per se!*"

"Tut! tut! young man!" interrupted *Chief Justice* Marshall; "assume that the Court knows something!" Has not Horticulture long since determined that certain varieties of Orchard-Fruits render a sure harvest? Why thus continue to waste money in premiums, or gratuities, for their exhibition or growth, unless the specimens are of surpassing excellence? Is it not infinitely better to stimulate the introduction or development of strange genera or species, which, in their natural evolution, may disclose ever new and superior forms and qualities? Surely at last, if at all, the Baldwin or Rhode Island Greening may claim precedence upon their conceded merits; and, "like good wine, need no bush."

The *Floral Exhibitions* opened on the 6th of March, a date somewhat earlier than usual, with a display of Hyacinths and Chinese Primula. The Azalea Indica and Cyclamen followed after a fortnight's interval. The specimens, upon either occasion, were from such various sources as to indicate a more general culture of those species of house-plants :— none of which exact unusual care, while all yield an ample return of rich bloom in the dead of winter. The plants of Azalea Indica that were successful in the competition, merit notice here because of their symmetry—which was simply perfect. Last year :—"some "of the best bloomers were drawn, from unilateral exposure to "the sun; and others were distorted in shape, to meet the unnat- "ural requirements of their growers." It is to be hoped that the lesson from *Whitinsville* may be profitable for instruction. Similar patience and skill may achieve like results.

Those Vernal Exhibitions were happily exempt from the fierce vicissitudes of temperature that have heretofore blighted the articles, alike with the hopes, of contributors. The afternoon of the next Exhibition, however, April 17th, was signalized by a cold N. E. wind, with sleet and snow towards the morning of Friday, thus alternating until Saturday night. The storm was one of the severest, and the volume of mingled snow, sleet, and rain as great as in the most violent storms of winter. How much this change of temperature had to do with the admitted reduction in the yield of many *Small Fruits* is a problem for any one to solve. Possibly, like most others, it will be decided according to the pre conceived theory or prejudice of individuals. "But, sir! the facts conflict with your theory!" "So much the worse for the facts!" is the flippant retort of the man who is never wise save in his own conceit.

The Annual Exhibition of Roses in 1879, was held, for the first time in a long while, at a date distinct from that assigned for Strawberries. The display may be characterized as fairly good. And yet, years since, a number of close competitors, by their keen rivalry, argued a more general interest than now, when all the premiums are awarded, if deservedly, yet by sheer necessity, to a single individual. Does it not seem as though florists might be found among the numerous members of this Society, elsewhere than in Whitinsville, zealous and able to develop the Rose into something like the perfection that it is made to attain in other parts of the Commonwealth? No one will contend, for a moment, that floricultural patience and skill are limited to Concord, Massachusetts. But what kind of ambition is that which contents itself with the growth of *Geranium* or *Petunia;* or is satisfied with some faint illusion of new shade in *Aquilegia cerulea hybrida!* A Society maintaining the rank that this deservedly does, abroad, should lay no unworthy offerings upon the shrine of Flora. Let its members elect, rather, by all honorable effort, to magnify their office!

The Annual Exhibition of Strawberries had been appointed for a week later than usual, or than long experience had sug-

gested; but it became necessary to anticipate the schedule date. Remarkable for the number of new varieties shown for the first time, whose value for general cultivation is at least questionable; and, at any rate, too uncertain to be demonstrated, or even tested, without much pains and toil, by the average pomologist: it was still more noticeable for the absence of species, approved by experience, and proved to be adapted to our varying conditions of temperature and soil, as well as tempting to the common palate. It would be a grievous error to drop the Downer, or Jenny Lind, the Triomphe de Gand, or Wilson, from garden cultivation; because Presidents, Americans, or Monarchs, have swollen like puff-balls. Bulk is not inconsistent with excellence, as the Doyenné du Comice illustrates among Pears: but what concerns you chiefly, as would-be cultivators, is not how many bites there may be to a cherry, but whether that especial cherry is good enough to pay you for disputing its possession with the "worm i' the bud."

A dish of Hovey's Seedling was exhibited by one of your *Vice-Presidents* that elicited a note of interrogation from the Committee, which was strangely mistaken: —

> Then necks were craned and heads are louted low
> In puzzled inquisition: ears wave pendulous and slow.
> Each bundle tempted: Hovey? or not! Alas!
> Leave it unsettled; — own yourself an ass!
> The plants from Hovey came, and Hovey knows
> Whether skunk-cabbage ever smelt like rose.
> And yet, committees sometimes justly bray
> Since Beurre d'Anjou ripens Suzette de Bavay.

Currants were exhibited, during their season, in about their average force and variety. With rare exceptions, however, cultivators appeared to have limited their efforts to La Versaillaise and the Red Dutch. It is to be hoped that the latter will never be utterly supplanted. Other kinds may yield larger berries; although abundant manure will do much to equalize apparent, rather than real deficiencies: but, for an ample crop of honest, ripe, sweet fruit, the good old Red or White Dutch can hold

their own against all comers. Moreover, — as regards Currants in general, — did any one ever find himself overstocked with them; so that his children would not pick them from the bushes, or the hucksters take them off their hands?

There was a woful falling-off in the display of RASPBERRIES during the Summer just passed. That there were any, is almost wholly due to the enterprise of a single cultivator, who has found that other things may be grown in the Tatnuck region, equally suited with the Jucunda to "put money in the purse." Not a specimen of Brinckle's Orange was placed upon our tables. Had your *Secretary* finally relinquished its culture, after his many eulogies of its fecundity and unapproachable excellence, he would merit your indignant censure. But it is a severe tax upon any piece of ground to be required to bear Raspberries for eighteen successive years, and a new plantation demands time to become productive. The Northumberland Fillbasket well upheld the reputation that it has earned for itself, in Worcester; and which but few pomologists elsewhere seem disposed to accord. In fact, that variety can be but little known, if your *Secretary* may judge from his correspondence with nurserymen and from their published catalogues. An ignorance of a variety — perhaps unequalled — that is absolutely discreditable to gentlemen who would prepare a complete Catalogue of the Fruits of America.

Your *Secretary* will confess himself somewhat puzzled. Are experts actually ignorant? or do not varieties exist whereof they confess that they know nothing? Years since, in response to an appeal from California for information, he learned what follows: —

"KNOX FRUIT FARM AND NURSERIES.

"PITTSBURG, PA., August 3, 1875.

"TO EDW. W. LINCOLN, ESQ.,

"*Dear Sir:*

* * * * * * * * *

"We have never grown the Northumberland Fillbasket, and know very "little about it.

"The Hornet is the grandest Raspberry we have ever grown, and we "think in California it would surpass all varieties, where it would be entirely "hardy. We pick these berries, with their stems like Strawberries, and "they equal Strawberries for size, — that is, medium Strawberries. It is a "strong grower and great bearer, continuing a long time in bearing. It "is not hardy here, although, *last* Winter, strange as it may seem, the canes "mostly were uninjured, although unprotected. Which we regard as a "proof of Mr. Meehan's theory that the cause of Raspberry plants being "winter-killed is owing to imperfectly ripened wood, caused by mildew or "rust. &c., &c., &c.

(Signed) GRIMES & MEYER."

Eulogistic notices of the *Hornet* continuing to attract his attention, in later years, your *Secretary*, with whom the development of the *Rubus Idaeus* was ever a passion, was led to procure some of the genuine plants. Upon exhibiting their fruit, however, for the first time, it was found to differ so decidedly, in all respects, from that which was entered under the same name, by *Vice-President* Hadwen, that a spurious sort was evidently in the market. Mr. Hadwen had obtained his from Mr. C. M. Hovey,* who admitted that he was somewhat skeptical as to its genuineness. My own came from Mr. Meehan, who answered an inquiry as to its purity and origin: — that he had no reason to distrust it; that he had procured his stock from two Frenchmen in his neighborhood; and that he had noticed its resemblance to the Northumberland Fillbasket. In an issue of the *Gardeners' Monthly*, (which he has so long conducted with signal success,) during the last Summer, he thus refers to a plantation of this variety under his direct observation, in Germantown:

"The canes, with their foliage, were models of health and "beauty, and were borne down, or would have been had they "not been tied, by their weight of fruit, and *such* fruit! Though "Herstine, Philadelphia, and other well-known kinds were "there and as well cared for, none of them had such large "berries or would fill the bowl, as well as 'the bill,' as these. "The berries were at least one-third larger than Herstine, &c., "&c." He continues, enlarging upon their long continuance

* A mistake: Mr. Hovey's skepticism is however, authentic. E. W. L.

in bearing, and declares authoritatively that the name is French and should be pronounced, — *Hornay!*

Your *Secretary* has been impressed with its strong resemblance to the Northumberland, and would not doubt their identity, did not the *Hornet* occasionally offer a larger berry and appear more tenacious of its foliage.

Should this matter seem to have claimed too much attention, it must be borne in mind that you were incorporated to "improve "the science" of Horticulture; whereof an exact and definite Nomenclature must ever constitute a significant feature. No Society can afford to encourage spurious genera or species. You declined to do so, heretofore, in a flagrant instance. * There cannot be too much caution, although future precise observation should determine it to be needless among Raspberries.

The matter of a correct NOMENCLATURE has been referred to incidentally. But can its actual importance be exaggerated? How many of the Members of this Society pause to consider what a card means, inscribed — "For name?" — or how much anxiety and positive labor such requests impose. Whatever self-interest or prejudice may be disposed to allege against any of your other Committees; — none have been moved by "envy, "hatred or malice," (from which, here as elsewhere, "Good Lord deliver us!") to challenge the competency of your Committee on Nomenclature. Your *Secretary*, at least, from an official observation of almost twenty years in duration, can attest to the close devotion of that Committee, with its membership changed but by death, to their more than usually thankless task. You are solicited to plant a Pear-tree named *Fondante d' Automne*. Precise nomenclature assures you that such Roses will smell as sweet if called *Belle Lucrative*. You are told that the *Brockworth Park* is one of the best Pears recently introduced; and the proof of that pudding makes you acquainted with the *Bonne de Zëes*, — of approved character and without cause for change of name. An illustration of the general subject may be drawn from the subjoined letter, written by one who has no superior as a Pomologist, and who will perhaps par-

* In the case of the so-called "Main Grape."

don its publication, because prompted by a desire to advance interests which he has so much at heart: —

"MOUNT HOPE NURSERIES.

"ROCHESTER, N. Y., Dec. 10, 1878.

"EDWARD W. LINCOLN, ESQ.,
"WORCESTER, MASS.
"*Dear Sir*:

"Yours of 7th inst., is at hand.

"'Bonne des Puits d' Ansault' is an unwieldy name for an English speaking people. Ansault is sufficient. There is just this objection to it: that "Ansault being the name of a place, there might be other varieties bearing "its name, as in the case of Anjou. It has been suggested to call Beurre "d' Anjou simply Anjou: but we have Bonne Anjou, Rouge d' Anjou, "&c., &c.

"We ought to make our catalogue conform to the Pomological Society's "Catalogue: — that it has not been done is an oversight. But 'Swan's "Orange' is the first name, — has many years of priority to Onondaga. "Between forty and fifty years ago this Pear was brought, without a name, "from Hamilton County, N. Y., to Rochester, by the late Gen. Swan; and a "Horticultural Society, then existing here, called it Swan's Orange. It was "wrong to change it. It was done at the suggestion of Gen. Leavenworth, "of Syracuse, who wished to identify the pear with his County — Onondaga

* * * * * * * * *

"If practicable, there should be an English name given to all fruits introduced from non-English-speaking countries. It would be a nice little chore "for the Pomological Society.

"You have a very able, active Society. Why not take this up at your "leisure?

"Yours Truly,

"PATRICK BARRY, (E. & B.)"

Admit that Swan's Orange had the priority: somebody must determine. The AMERICAN POMOLOGICAL SOCIETY — of which Mr. Barry is *Vice-President* — has decided that the pear shall be called Onondaga. To whom shall an appeal be taken?

And then, again, why *not* 'Anjou?' The fact that there may be also a Bonne Anjou, or Rouge d' Anjou, need occasion no conflict.

"Where the O'Donohue sits, *there* is the head of the table."

"*Ansault* is sufficient,"—as Mr. Barry says. When the place produces another pear worth naming — name it! Until then, sufficient unto the day be the pear, like the evil thereof. The Josephine de Malines and Winter Nelis originated in the same city. Nomenclature has few difficulties that we do not create for ourselves; and all combined are less troublesome than would be caused by the disuse of a foreign or dead language.

The plague of FRUGIVOROUS BIRDS has continued with us throughout the past year. As though it were not enough for the fruit-grower to have his enemies in-lawed; he must also see his prospects of redress grow dim in consequence of deliberate efforts to spread false information. Let Shakespeare and Milton hide their diminished heads! as the *Monthly Reader*, "circulated among the schools," utters the following "Plea of the Sparrow:"

> "So don't, good master, grieve us,
> But cheer us and relieve us;
> And we will eat, next season,
> The canker-worms your trees on."

How can any one expect the young idea to "shoot," when loaded with a full charge of such bathos!

But hark to a man who knows something! Who was, in fact, dismissed from the Department of Agriculture for that singularity! *Professor* C. V. Riley, in a letter to the *Commissioners* of the District of Columbia, expresses the opinion that "the "English sparrows have been useful in ridding the shade-trees "of cities of the canker-worm, but believes that they will become "great pests in time to the farmer and fruit-grower. He be- "lieves that the insects most troublesome to the fruit-grower "are not touched by this sparrow. It does not save the elm "from being riddled by the *Galeruca*. He does not believe it "possible to exterminate the bird *now*, but would not protect "it,—letting it take its chances." And he adds,—what your *Secretary*, having implicit faith in the boys of Worcester, takes pleasure in publishing more widely:—"One thing is certain;

"that those who do not want the bird on their premises will "have a good luxury in sparrow pies."

Is it possible that there are neither Apple or Cherry Orchards in Washington? Other cities — of inferior population — perhaps consequence — are not as destitute. Yet *Professor* Riley does not speak of the Apple, and Cherry, or even the Strawberry, as exempt from insect-ravage; for, indeed, how could he, unless they are far luckier in the Federal District than their congeners elsewhere.

Dr. Elliott Coues, in the *American Naturalist*, classes sparrows among "the injurious agencies of Nature; they seeming "to devour insects *only when they cannot get garbage, grain, or* "*young herbs to eat.* Removed from the natural checks upon "increase which surround a bird in its native land, and trans- "planted into a new region where they were in the midst of "unnatural conditions, of course all their strong traits became "stronger."

Dr. Dixwell's dissection of the stomachs of thirty-nine sparrows,— male and female; during the height of the canker-worm pest in the Jamaica Plains district, in our own Commonwealth; by which no trace of insect or worms was disclosed; furnishes but a single instance from the many that betray the granivorous nature of the species. Should not such a precise test, indeed, influence *Professor* Riley to revise an over-hasty inference, and to concur in the conclusion of the majority of careful observers that neither this stranger, nor our native birds, have diminished to any appreciable extent, the plague of worms upon fruit-trees in town or country.

One English writer, who carries water upon both shoulders with a marvellous equipoise, is very mellifluous. He would seem almost qualified to bear a torch in the next campaign for the salvation of a Union that was thought to be cemented in blood, but which must be saved over again, under stress of partisan mendicancy, at least quadrennially. Just listen: "Pom- "ologists are somewhat divided as to the benefits or injury "derived from the *soft*-billed birds. The robin ("soft-billed"

"*Turdus*!) especially comes in for a good share of reprobation "during the season of Small Fruits. Nevertheless, we see no "reason to doubt the value even of this fruit-loving bird, if "proper means are taken to protect the fruit during its ripen- "ing. *A little shooting goes a long way.*" It does that! in Worcester carrying you to the Police Court.

A naturalist — he defines the distinction between their habits — seldom observed or stated with such clearness; and which, if preserved, would modify objection to their increase or diffusion: "The Swallow, Swift, and Night-hawk, are the guardians of the "atmosphere. Woodpeckers, creepers, &c., &c., are the guard- "ians of the trunks of trees. Warblers and fly-catchers protect "the foliage. Blackbirds, crows, thrushes, and larks, protect "the surface of the soil. Snipe and woodcock protect the soil "under the surface. It is a fact that nearly all birds are more "or less beneficial in destroying forms of life which, when in "excess, are wonderfully destructive to crops."

"When in excess!" Aye: but when the birds themselves are in excess — what sort of negative can you make of these two affirmatives? "*Quis custodiet custodes?*"

Never were all forms of insect-life more numerous or unmolested, in Massachusetts, whose legislation is annually invoked in wider protection of all that is winged and worthless.

Among the defects in the lamb-like character of your *Secretary*, forgetfulness is not conspicuous. Shall an Annual Report to this Society omit all mention of the *Turdus migratorius?* Hark! to a writer, in the *American Agriculturist*, from Connecticut, whose eyes are partially open: "This is a comely bird— "a fair singer and early; an industrious hunter of insects. "After his brood is hatched, he eschews his old provender and "brings up his whole family upon the costliest products of the "garden. In June, he sits on the fence and eyes the growth of "fruit; then gorges successively strawberries, cherries, cur- "rants, raspberries, and grapes."

Seeing the evil thus clearly — what remedy does he suggest? Why, the very simplest: When you are not fishing for menhaden, protect your garden with the seine!

Actual experience, during the last year, has taught your *Secretary* that there is at least one effective safeguard from the depredations of birds — *remedium felinum.* A cat — the pet of a young daughter — has not failed to supply her successive broods with their daily *turdus.* It cannot be claimed that she is of any improved breed, nor that possession of an extra toe upon either fore-foot has rendered her faculties more acute. But this at least may be asserted, with positive assurance, that she has been "bred to a feather."

If you would derive any benefit from birds — designed to be *ferœ naturœ* — assuming the possibility of benefit under any circumstances, — stop domesticating and petting them! Those that were created insectivorous, will obey their instincts, if not pampered until their tastes are diverted and turned in an unnatural direction. Withhold the protection of law for a while, that their numbers may be thinned and that the report of the shot-gun may inspire a wholesome fear. Thereafter, and only then, may you engage in the ceaseless struggle with insects, which yearly grows more onerous, convinced that your chances of success are not lessened, if they have not been facilitated, by your own efforts.

That you will need all possible assistance against the *Lachnosterna fusca* — or Cock-chafer* — your *Secretary* believed when writing his last Annual Report and is more fully persuaded now. The wildest imagination is staggered, at the official statements of the countless hosts in which this insect swarms over the longest settled countries of Europe. They descended, in myriads, upon Schleswig-Holstein, about the 20th of May. School children were employed to attack them — shaking them down from trees, on which they had settled, into sheets — then into boiling water, or under rollers. On one large farm it is actually stated that 130 tons were collected and paid for at the rate of a half-penny per pound. As a practical set-off, — "the corpses make a rich manure."

"So likewise in Normandy is the *Ver Blanc* a name of terror to the gardener." Nothing escapes them. Trees are denuded

*More commonly known as the May-Beetle. E. W. L.

of their foliage by the perfect insect; while the roots of all kinds of vegetables, flowers, plants, and even young trees are devoured by the *larvæ*. An individual rented several acres for a market garden and nursery. In less than a month after the buds of Roses were well set, the grub cleared all before him. Of 7,000 briars (stocks for the Rose), scarcely as many hundred were spared.

It is to be feared that few realize the wide diffusion of this insect in New England; and that still fewer adequately estimate the damage that he does. The foes that assail you are neither drought nor a variable climate. They must be sought beneath your feet, in the soil that you cultivate,—alike insatiate of the roots of grasses or of the strawberry-plant. You will say —search for and exterminate them! Try it! and then admit that the word impossible should have place in horticultural if not in Napoleonic dictionaries. A portion of the Public Grounds in this city, was ploughed deeply, during the Autumn of A. D. 1877. Exposed in the furrow to the frosts and snow of Winter, it was ploughed anew in the following Spring, and again in Fall, lying fallow the while and thereafter. Once more ploughed, harrowed, and then carefully forked over, you think, do you not, that all forms of insect-life were effectually destroyed? On the contrary, the soil was literally crawling; a single spadeful would bring to light a dozen large *larvæ*. After as thorough destruction as possible, the land was finally sown. But, that you may see how ineffectual was even such deliberate work, I submit, for your inspection, a section from a stake that was thrust into the earth for the support of a flowering spike of Gladiolus. It is a sample of fifty (50) gnawed in like manner. Where shall you search for this *Lachnosterna fusca*, if he stays in the ground for three continuous years? In what manner shall you contrive to exhume him—if he descends, at some period of his maturing life,—to a depth of five (5) feet! Your *Secretary* confesses himself puzzled; and believes that it will prove a tough stint even for the *Turdus!*

In his last Annual Report, referring to a then recent Horti

cultural Exhibition in this city; nominally of the New England Agricultural Society, but in fact and substantially, furnished by our own members; your Secretary expressed his deliberate opinion that this Society should consider the matter well, before deciding to participate, by active or passive co-operation, in another similar Exhibition held at nearly the same date. "If "the New England Agricultural Society should determine to "repeat its visit to Worcester, as is more than probable; there "can be no doubt that it will be neither courteous nor politic "for us to propose an Exhibition in antagonism. Yet the "best interests of Horticulture, in this region, are measurably "committed to us; and we have no right to be recreant to the "trust. Wherein, save in the domain of Flora, is not and "would not a Horticultural Exhibition, during the first week "of September, be premature?"

Your TRUSTEES, accepting this suggestion, voted without material dissent, to relinquish, at least temporarily, the usual ANNUAL AUTUMNAL EXHIBITION of this Society. An Exhibition was however held, during the first week of September, nominally under the auspices of the New England Agricultural Society, which was successful in the collection of gate-money. A misapprehension evidently prevailed, on the part of the New England Society, whereof you should be advised, that you may do no injustice to its officers. It is properly deemed intrusion for a minister to officiate in a foreign parish without invitation or consent. Some have inferred that the New England Society was thus intentionally discourteous. But the Massachusetts *Ploughman*, its official organ, in its issue of August 30th, evidently anticipated your co-operation, for it says that "The "Massachusetts Horticultural, the Worcester Horticultural, as "well as other Societies and numerous individuals celebrated in "botanical and horticultural science, have promised most liberal "contributions to this part of the Exhibition."

Again, on September 6th, when summing up the results of the Exhibition, just closed, it observes that "the Members of "the Worcester Horticultural Society, under whose auspices

"this portion" (that at the Skating-Rink) "was held, have "good cause for congratulation in having presented the largest "and most attractive show of fruits, vegetables, and flowers, that "has ever been collected under one roof in any of the New "England States."

Waiving present consideration of the actual fact that former Exhibitions of the Worcester County Horticultural Society, in Mechanics Hall, were never even approached since, in bulk or quality; it will doubtless cause unfeigned surprise to the *Ploughman* to learn that the aid and co-operation of this Society was not even asked!

"Nothing succeeds like success," was the comment of one of our modern superficial aphorists upon the casual good luck of a Massachusetts mercenary politician.

"For what shall it profit a man if he shall gain the whole "world and lose his own soul?" said He who spake as never man spake. *"C' est magnifique! mai, ce n' est pas la guerre!"* exclaimed the bronzed veteran of France, as the Light Brigade swept by him to glory and — annihilation. The question recurs and will down at no bidding; — the question put at your last Annual Meeting and ignored at the first suggestion of a greed that cared for aught but the true interests of Horticulture; — "Wherein, save in the domain of Flora, is not and would not a Horticultural Exhibition, during the first week of September, be premature?" Barns and barracks may be stuffed to repletion with the crude harvest of late Summers. But, in what manner, and to what extent, do you thereby "encourage and advance "the Science, and improve the Practice of Horticulture," — for which, only, did JOHN GREEN, FREDERIC WILLIAM PAINE, and ANTHONY CHASE ask to be incorporated? Charles T. Foster shows the *Marie Louise* at the Town Fair in Holden; and the observant reporter notes that it has grown one-fourth in bulk within the ten days since the New England Agricultural Society invited specimens for competition. The officers of the latter-named organization pause, in their grand rounds of festivity, to establish a class of yearling bulls! No fault could fairly be

found, did the award for Glout Morceau, or Winter Nelis, specify the immaturity of those varieties; or, in even the most obscure way, inform the ignorant but curious cultivator that they should be suffered to hang upon the tree two months longer. But the motive that prompts to an exhibition of the Baldwin or Roxbury Russett, — scarcely one-fourth grown, — has nothing in common with a genuine love of Horticulture. That seeks perfection of development, — nor will be content with aught else. "Will not their money be good?" was the answer of one of our members to a protest, by your *Secretary*, against the exhibition of fruit vastly inferior to the specimens usually shown by the speaker. Of course, — if the purpose is solely to "spoil the Egyptians," it can matter but little how it is done. But, — as Horticulturists,—you cannot, if you would, divest yourselves of your personality. Whether as individuals, or as members of a committee, you will be holden to a strict responsibility for the maintenance of that high standard which you have established for these Halls; and by upholding which, for long years, you have achieved a reputation second to none among the Horticulturists of the Republic. A mess of pottage makes but poor rations, at best: and "no man can serve two "masters."

This Society has ever kept itself pure; remaining true to its original high aim, and courting favor through no meretricious attractions. In its darkest days, when the shadow of debt loomed over us; — some of your members put their hands in their pockets, and, by liberal contributions from their private substance, relieved its embarrassments and irradiated its future prospects.

Such of you as chanced to be in the audience might have heard, recently, that the aim of the New England Agricultural Society; and inferentially its wards; is, not to develop the Bull and Stallion, as had been supposed; but rather to perfect the Christian Home! You may inquire why there are, then, no specific premiums for such homes? Let it suffice for you to know, that in tracing the process of Evolution, it is wise to

revert to the protoplasm. Therefore, and most essentially, is it that from the trotting sulky and base-ball diamond may be expected the "just made perfect" saints of New England.

Our own Society can indulge in no such pious dreams. Greek, or Barbarian; Gentile, or Jew; from the Gardens of Alcinous, or those in which the Fire-Worshippers of Persia cultivate the Rose; the love of Flower and Fruit is in and of itself a species of devotion: — limited to no country, — contracted by no creed. An effort was lately made to steal your household gods. The *Attorney General* of the Republic; laboring under an optical illusion, easily explicable when it is remembered that his official gaze has been somewhat intent upon the "moonshine" of Carolina; fancied that he detected a heavenly presence in the crowd which thronged around him. Your *Secretary* would not like to vouch for Ceres, whose good manners may have been corrupted by evil communications while scouring *Avèrnus* for her daughter. But he can bear cordial witness to the fact that no errant fancy has ever seduced her long-time associates. And it would have been a source of deep regret, indeed, had Flora and Pomona, after keeping their virginity for so many centuries unharmed by Faun or Satyr, at last prostituted themselves, gratuitously, upon the first unclean solicitation.

In his late Semi-Centennial address before the Massachusetts Horticultural Society, Hon. Marshall P. Wilder speaks of Agriculture as having "included" Horticulture. How so wise a man could be betrayed into such a serious error would be unaccountable did we not recall his association upon the "State Board." For it was never thus; — whether under the bright Heathen Mythology, or the more ascetic Mosaic dispensation.

When God had finished the Earth — *Terra* — the fields and farms — *ager* — "behold! it was very good!" But when He would improve upon His own work, He "planted a garden" — *Hortus* — "eastward in Eden, and there He put the man whom "He had formed." Not until after Eve, — "anxious and aim-"less," — had eaten of the tree of the knowledge of evil; com-

monly accepted as the *Doyenné Boussoc;* — was man "sent forth "from the garden of Eden, to till the ground from whence he "was taken," under the dire sentence : — "in the sweat of thy "brow shalt thou eat bread!" *Hortus* — the garden — was Paradise, in its sinless innocence. *Ager* — the field, or farm, was sentence and punishment. "Cursed is the ground" — *tellus, vel ager,* — "for thy sake;" "in sorrow shalt thou eat of "it all the days of thy life. Thorns, also, and thistles shall it "bring forth to thee; and thou shalt eat the herb of the field." How different the lot of the Horticulturist! "And out of the "ground" — in the garden — "made the Lord God to grow "every tree that is pleasant to the sight, and good for food." The envious and outcast may wonder when and in what manner Paradise was regained. That is the exclusive secret as it is the sole privilege of Horticulture. Those who deny that ours are the "trees pleasant to the sight and good for food," may dispute, if it pleases them, that "the fields bring forth thorns also, "and thistles."

Shall the Worcester County Horticultural Society, under the spur of resentment, or at any other instigation, reverse its recent course and resume the Annual Exhibitions that were abandoned after a full conviction of their utter worthlessness? Your *Secretary* would unhesitatingly deprecate any such policy as a step backward in the path of progress. True; — it is not pleasant to see others "reap where they have not sown and gather where "they have not strewn." Yet that is the way of the world: for, since the first furrow was turned, the tramp has ever trodden upon the heels of the husbandman. Our professed and actual aim is, — "to advance the Science and improve the practice of Horticulture." What ought to concern us, chiefly, is; — in what best and most effectual manner may our object be attained!

It is not proposed to consume your time, and exhaust your patience, by repeating the arguments in favor of a final abandonment of the Annual Autumnal Exhibitions. Such as they were, — they have satisfied your TRUSTEES for the two years

past, and during at least, that period, concluded your action as a Society. As Horticulturists, have you any reason for genuine regret? Are you not content to persevere in the course deliberately entered upon, and, for the first time, consistently followed throughout the official year that closed with yesterday's sunset? In his Report for A. D., 1878, your SECRETARY referred to our weekly meetings as having been the life of the Society. How only the faintest breath quivered in its nostrils when they were instituted. Relating how they awakened interest, commanded attention and invited membership; he proceeded to indulge his fancy in the portrayal of a possible future: "Attracting the "first flowers of Spring, they could be made, by proper direction, "to fill each successive week throughout the year, with ample "suggestiveness to the eye or palate, until their close with the "last fruits of winter. Every Exhibition would then have a "freshness that can be attained in no other way. And novelty "has a charm in itself. Your earnest attention is solicited for "the policy, simply outlined as it is, of relinquishing the oppres-"sive and unwieldy Annual Autumnal Exhibitions, and applying "the energy and means, absolutely wasted upon them, to magnify "the Weekly displays. The importance of these, conducted as "now, when commenced each year, is found to increase by their "own momentum. They grow large enough for convenient "control, by August; yet not too large to be comprehended in "detail. What they might become, if kept up through the "whole year, can only be told after actual experiment."

And now that the experiment has been tried, it rests with you to determine wherein, and to what extent, it was a success — in what imperfect measure it was a failure? Among Plants, and Flowers, there was evident a continuous development, from the somewhat tardy Exhibition of Hyacinths until the final termination of out-door growth by a killing frost. Dates may have been appointed, untimely. No one can foresee the precise character of a season; nor predict that an interval of "ethereal mildness" will extract unnatural bloom from the gales and snows of March. Something must be trusted to experiment;

as horses have been fortunately swapped in the middle of a stream. That Society will be lucky, indeed, which can felicitate itself without reserve, upon the opportune result of a first attempt. With accumulated experience, it will be a task of comparative ease to correct mistakes in the schedule, or to remedy its deficiencies. Some Florists, as well as other some who do not aspire to that peculiar title, opine that it might be well to provide for a weekly display of *Cut Flowers*, — by Stands, in addition to the Baskets, Designs, or Dishes, that may be specifically invited. A wide discretion should be allowed the Committee; — which ought not to be expected, as no competent Committee would consent, to award Premiums irrespective of absolute, as well as relative merit. Good nature has its proper place in the social economy, but it is misplaced when it attempts to bias the judgment. Our personal friends are, of right, precious to us: yet the knowledge that a friend is among the competitors should restrain us, all the more rigidly, from doing injustice to a stranger. At the same time it is sufficient to be upright. Some men are so anxious to stand straight that they lean backwards. The just judge should be wholly without inclination: an impartiality, if difficult of attainment, all the more creditable to those who strive for it and achieve success in its pursuit, in howsoever moderate measure.

Allusions have been made, incidentally, to the growth of fruit when the specimens were suffered to mature. Some Apples, and more Pears, were plucked from the tree in early September, under the strong attraction of offered Premiums, whose crudity of shape and size could only serve to mislead. How different has been the appearance of the same varieties as displayed, in full perfection and even extreme magnitude, at our recent Weekly Meetings! Recall the St. Ghislain, and the Washington! of a size and beauty never before seen. The Doyenne du Comice, from Oak Avenue; and the Duchesse, (its plate of ten weighing ten pounds, nine and one-fourth ounces,) from Portland street; once again showing how that variety riots in the South-Eastern portion of our city. Bear in mind the specimens of

Dix (weighing six pounds and one-fourth ounce,) and of Onondaga (turning the scales at ten pounds five and one-fourth ounces), and deny, — if you can and will, — that complete development should, above all, be required by a Horticultural Society that would be true to its mission!

All this is possible with Weekly Exhibitions. That it is not of more than qualified attainment, in any other way, you well know from unsatisfactory experience in the past. The Annual Autumnal Exhibitions heaped up a profusion of Flowers, Fruits, and Vegetables, — just as they could be had. "Beggars must not be choosers!" is an old saw, and modern instance. You called for them: — and they were brought. It is no wonder, that, having at heart the best interests of Horticulture, you soon tired of a method of display which was only not chaos because not absolutely formless and void. You are now doing well. Why not let well enough alone? It is the consistent and matured opinion of your *Secretary* that you would only go further to fare worse.

Your older Members, who were privileged in a personal acquaintance with John Milton Earle, have been gratified to behold, during the past September, some superb specimens of his seedling Pear which, during his life-time and with his consent, your *Secretary* was permitted to name — *Earle's Bergamot.* The thanks of all lovers of good fruit are due to our associate, Mr. Velette P. Townsend, whose hearty appreciation led him to procure scions whereby the new variety was doubtless saved from extinction. No better nor more appropriate monument could be erected to the memory of our deceased friend than this which he thus innocently reared for himself. The specimens shown this year, manifested their descent from the Belle Lucrative, in form and abundant juiciness; while their color was vivid enough for the Beurre Montgeron. The lack of a decided flavor, which is the chief deficiency of the Belle Lucrative, is supplied in its character of Bergamot. These Reports have heretofore indulged in high anticipations based upon confidence in Mr. Earle's rare judgment and *bona fides.* Those

sanguine hopes are evidently to be amply justified by a felicitous concurrence of time and experiment: —

"Sic itur ad astra."

This Society was officially invited, in the early Summer, to send delegates to the Seventeenth Session of the AMERICAN POMOLOGICAL SOCIETY, — to be held in Rochester, New York. According to a practice, of original establishment and subsequent acquiescence, credentials were issued by the *Secretary*, to the following representative Members: —

William T. Merrifield, Stephen Salisbury, Philip L. Moen, Obediah B. Hadwen, James F. Allen, George E. Francis, Henry Phelps, William H. Earle, Frank J. Kinney, Henry L. Parker, George Cruickshanks, William W. Cook, Calvin L. Hartshorn, F. M. Marble, John C. Newton, Edward W. Lincoln.

Some of those delegates attended, although fewer than could have been desired. It is to be feared, however, that such will always be the case so long as the American Pomological Society persists in holding its meetings at a season when every one is busy. The date would not be objectionable, perhaps, were it the simple aim and end of the American Society to hold an Exhibition of Fruit. But the actual inspection of specimens is not the purpose of those sessions.

Should the Eighteenth Session of the American Pomological Society be held in Boston, as, in the Divine Mercy * may be the case, it is suggested for your seasonable consideration whether it might not be courteous, and eminently proper, for this Society to ask that one day be set apart for a visit to Worcester. Reasons in plenty may be adduced, as occasion serves, why such an invitation should be tendered and accepted. It is sufficient, now, to direct your thoughts to reflection upon the subject.

Your *Secretary* has proposed to himself, in occasional moments of enthusiasm, to indulge in speculation upon the

* The life of Marshall P. Wilder being prolonged, in response to a common prayer.

merits and possibilities of the *Shade* and *Spading-Fork*. He has sometimes persuaded himself that therein is involved the true theory and practice of future *Terræ*-culture. A similar idea was recently elaborated, from an English point of view, by the First Commoner of England,* who, in an address to his constituents and neighbors at *Hawarden*, told his belief that "one of the means by which cultivators of the soil might "improve their position, was to pay a greater amount of atten- "tion to what was called garden and spade cultivation."

If no man can consume what that man can grow, what need of any one lacking food who is willing to work? Nay, — why limit the capacity of production? Why not rather stimulate it to the utmost, — providing simultaneously for the more thorough distribution of results! Multitudes in far-off lands are even now starving for lack of the very crumbs that fall from our plethoric tables. How many, even among us, are pining from want of the fruit that actually poisons the ground in the plentitude of its decay! You say that you cannot obtain a living price for your crops. Are you certain of that? The writer conversed, lately, with that rare animal—a contented *terræ*-culturist—who feeds out fruit to his stock and expresses himself satisfied with the price that he is getting for his milk. He said that he could produce for two cents per quart, and obtain four in return. Have you ever computed the cost of growing those bushels of Bartletts and Bonne de Jerseys which you complain are unsale- able? Have you once tried (persevering continually), to diminish, and thus perfect, your crops, that their conceded excellence should compel a demand for them? Has it ever occurred to you that the conditions of a year of scarcity differ only in degree from those wherein there is a superfluity: and that, if the superfluous harvest suffered, or exacted from a tree, were checked, or only not required, there would be no such thing known as famine or plethora in alternate seasons. When the first section marched by—indifferent, or scorning the marriage- feast — a message was sent that constrained the awkward-squad.

* Mr. Gladstone.

Quite recently a Pear-tree, of the *Duchesse d'Angouleme* variety, somewhat famous in our records, was relieved of thirteen bushels of fruit. The owner — not an especially avaricious man — complained that he was offered for them but two and one-half dollars per bushel. That does seem to be an inadequate price. But — supposing, from one cause and another, that it is all which can be obtained, how much better is it than nothing? Nay, — how near would it come to a fair return upon the original investment, were that price averaged upon an acre!

From a table carefully compiled by the Messrs. Lawson, of Edinburg, it appears that the number of trees which can be planted upon an acre of ground, — at a distance apart of Thirty (30) Feet, — is as follows: Irish acre, 79; Scotch acre, 60; Imperial acre, 48. Assume, then, that your tree is suffered to bear ten (10) bushels of fruit, which will command but One Dollar for each and every bushel! Your trees cost — say $1.50 each, being more or less manured. You would then get, in return of the original investment, from an Irish acre, $790; from a Scotch acre, $600; from an Imperial acre, (Yankee by Common and Statute Law,) $480. Does even the Missionary Enterprise, or the Barre & Gardner Mortgage afford a better harvest.

But, you will say, the market is glutted. The sum mentioned was offered, however, for those bushels of Duchesse, and doubtless the purchaser felt assured of his customers. The distrust is not without reason, nevertheless, and its removal depends upon yourselves.

The old Dutch Monopoly used to burn their nutmegs when afraid that the world might be too highly spiced. It does not seem to have occurred to them that the burden might be adjusted to the back; and that the tree which bore less might be trained to bear longer. You cannot burn Apples or Pears, but you can thin out so that one barrel of full-grown and well-ripened fruit shall answer for and pay better than a hogshead of smaller, immature, or imperfect specimens. You object that to thin out your fruit exacts too much labor! Possibly:—but evade or escape the primal curse if you can! You may say

that it will not pay to do it. That, also, is possible; yet the averment could be made with greater certainty were the experiment once fairly tried. This is known: that the Dutch East India Company never came to want because nutmegs were unsalable. The market that was not found — ready to hand — they created; that is all.

How many people are there among us who have not tasted of fruit this whole season? Do you assert that it is their own fault if there are any, it costs so little? But what matters it how little, if it is too much? Will you not try, for once, to grow fewer specimens, and better as they are fewer? To mature them by so mulching the trees as to retard development under our torrid suns? To offer them at a price which is satisfactory because it is reasonable, and to rejoice if you sell them so low that no one shall, perforce, elect liver or tripe.

There are gentlemen in this presence, to whose political vision all vexed questions of finance are transparent. Who are convinced that the baser currency inevitably drives out and supplants the better and more valuable; — more valuable and better as it is the veritable and almost sole representative of the famine, and thirst, and life, that it dearly cost. Yet, as Horticulturists, they persist in growing the *Boussoc*, *Clairgeau*, and *Duchesse*, to the exclusion of the *Comice*, *Beurre d'Anjou*, or *Winter Nelis*. They are fully aware that but two metals have ever served for coin. But they prove all things, and — holding fast to that which is good — do not let go of the poor or worthless. With the power to make the market what you would have it, wherever is the wonder that you have it what you make it!

It may appear a dream of madness — the substitution of the Spade, or Spading-Fork, for the Plough; yet calmly considered, why should not such a result come about in the not remote future? And even were tillage upon a large scale, to insist upon a retention of the more unwieldy implement, with its attendant train of brutes, it might yet be possible to demonstrate that the harvest from such increased surface would not neces-

sarily surpass the yield from a little land well tilled by the cunning hand and fitting tool. Men are so different — in physical force and natural aptitude, — that a task which might be little more than play for one, would almost overwhelm another. Yet France has shown the possibility of a nation becoming not only prosperous, but wealthy, from individual labor upon small allotments. Her people are reported to be mostly engaged in useful occupations, although her chief city has its full share of idlers who toil not, neither do they spin. But, from the English or American loafer, who will not dig, and is never so proud as when he begs; whose fixed creed is that the world owes him a living, and who takes good care, in collecting the debt, not to get beaten on the execution; France is measurably as happily exempt. Her farming is essentially gardening, as depicted by Mr. Gladstone; the earnest, popular, productive employment of a national life. When the young American can learn that contentment is better than riches; that enough is as good as a feast; he may find, to his surprise, that a subsistence, at least, is within his reach. In a manlier life than is offered by that incessant treadmill of the city, from boarding-house, over kerbstone or behind the counter; discontented and anxious because without sufficient occupation; and only too ready to pull down others who, howsoever willing, are unable to supply all with high wages for little work. The Earth, after all, is a bounteous mother; she welcomes all to her arms, and responds eagerly to their caresses. Forged notes and fraudulent shares are not of her increase. But she is ever ready to yield manifold to him whose steady industry places him above repining; whose desires, like his needs, are kept under control; and to whom

"Better is a dinner of herbs, where love is, than a stalled ox and hatred therewith."

But why waste time and words in a feebler expression of what was so forcibly and tersely stated in a quaint rhyme of

GARDEN LORE.

"Every child who has gardening tools
"Should learn by heart these gardening rules.

"He who owns a gardening spade
"Should be able to dig the depth of its blade.
"He who owns a gardening rake
"Should know what to leave and what to take.
"He who owns a gardening hoe
"Must be sure how he means his strokes to go.
"While to shift a pot, or annex what you can
"A trowel's the tool for child, woman, or man.
"But he who owns a gardening fork
"May make it do all the other tools' work.
"'Twas the bird that sits in the Medlar tree
"Who sang these gardening songs to me."

Several Floral Exhibitions have been held, during the past year, that might well have been nipped in the bud. After the reporters for the press had prepared an exact and elaborate description of the crowns, crosses, broken columns, etc., etc., the remains of the deceased would be viewed, in their turn, and as a necessary portion of the show, by an indiscriminate throng, whose morbid curiosity must be appeased like any other insatiate appetite. The dictates of good taste, like the restraints of a wise frugality, are disregarded in this ostentatious rivalry upon the verge of an open grave. Of course, little heed is paid to the fitness of things, and a man who could not tell one flower from another, while living, is overwhelmed, in his coffin, by a profusion as heterogeneous as senseless. The laurel-wreath might well bind the brows of our illustrious Soldier when he, but yesterday as it were, once more stepped foot upon his native land.

"*Palmam qui meruit ferat.*"

But now, as erst, the value of a tribute lies in the rarity of its bestowal and the virtues of the recipient. Death works no miracle; howsoever much it may alleviate judgment:

"Be, to his faults, a little blind!
"Be, to his virtues, very kind."

But forget not, even in the blindness of friendship, as you render some things unto Cæsar, to reserve his own for God!

The watchful care of our *Janitor* has preserved Horticultural Hall from sensible depreciation. Its advantages as a place of pleasant resort are more widely appreciated, as its facilities of access and security of egress become familiar to the community. Yet the floor of the Hall of Pomona is not what it should be, to merit and command that constant use which is for your pecuniary interest; and a wise forethought would seem to suggest its thorough and perfect renovation. Suffering, in common with others, from the protracted depression in the value of Real Estate; we may well hope to share in the steady, if slow, improvement which awaits that form of investment. Nevertheless, there are imposed upon us artificial burdens;—heavily handicapping us in what should be an equal race;—the passive endurance of which, with deference to your better judgment, would appear to be no longer a virtue.

The General Statutes of the Commonwealth exempt from Taxation "the personal property of literary, benevolent, chari-"table, and scientific institutions incorporated within this Com-"monwealth, and the real estate belonging to such institutions, "occupied by them or their officers for the purposes for which "they were incorporated."

This WORCESTER COUNTY HORTICULTURAL SOCIETY was incorporated for the purpose, among others, of "advancing the "science of Horticulture." Yet, ever since the earliest acquisition of any tangible estate, the Assessors have doomed it in a sum amounting to one-fourth its annual income. The *General Court* terms Horticulture *"a Science":* the Assessors deny it!

The Statutes also exempt from taxation "Houses of religious "worship: * * but portions of such houses appropriated for "purposes other than religious worship, shall be taxed at the "value thereof to the owners of the houses."

But this Society, when attempting to lease its Hall, is confronted by those who would otherwise become tenants, with the notorious fact that they can hire, for a less sum, "portions of "houses of religious worship."

The Assessors ignore, or violate the law — peremptorily requiring all "portions of such houses appropriated for other than "religious worship to be taxed at the value thereof."

There have been religions, since the world was inhabited, for which countless myriads esteemed it a privilege to die in indescribable tortures. A waning faith is satisfied, in these latter days, with a profession that is popular because vapid, sonorous because hollow, and precious in proportion as it is cheap.

Your *Secretary* believes that every dollar in the community should bear its proportion of indispensable public burdens. And he would suggest that this Society bestir itself in aid of the recent movement for equal and just Taxation, to the end that, without any exception in favor of political or religious craft, strict equity may direct the levy of all sums necessary to maintain the peace and dignity of the Commonwealth.

All which is respectfully submitted by

EDWARD WINSLOW LINCOLN,

Secretary.

Horticultural Hall, Worcester, Mass.
November 5, A. D. 1879.